

# HP StorageWorks

## XPath OS 7.4.x command reference guide

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XPath OS 7.4.x command reference guide

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## About this guide

This guide provides information about:

- Setting up and configuring the HP StorageWorks Multi-protocol (MP) Router
- Maintaining and operating the MP Router
- Basic troubleshooting and diagnostics

## Intended audience

This guide is intended for system administrators and technicians who are experienced with the following:

- HP StorageWorks Fibre Channel Storage Area Network (SAN) switches
- XPath Operating System (OS) 7.4.x or earlier

## Related documentation

Documentation, including white papers and best practices documents, is available on the HP web site:

<http://www.hp.com/country/us/eng/prodserv/storage.html>

To access current Fabric OS related documents:

1. Locate the **IT storage products** section of the web page.
2. Under **Networked storage**, click the **SAN Infrastructure** subsection.
3. From the **SAN Infrastructure** web page, locate the **SAN Infrastructure products** section.
4. Click **Multi-protocol Routers and Gateways**.
5. To access XPath OS 7.4.x documents (such as this document), click **B-Series Multi-Protocol Router**.  
The **HP StorageWorks B-Series Multi-Protocol Router** overview page displays.
6. Go to the **Product Information** section, located on the right side of the web page.
7. Click **Technical documentation**.
8. Follow the onscreen instructions to download XPath OS 7.4.x documents.

# Document conventions and symbols

**Table 1** Document conventions

Convention	Element
Medium blue text: <a href="#">Figure 1</a>	Cross-reference links and e-mail addresses
Medium blue, underlined text ( <a href="http://www.hp.com">http://www.hp.com</a> )	Web site addresses
<b>Bold font</b>	<ul style="list-style-type: none"><li>• Key names</li><li>• Text typed into a GUI element, such as into a box</li><li>• GUI elements that are clicked or selected, such as menu and list items, buttons, and check boxes</li></ul>
<i>Italics font</i>	Text emphasis
Monospace font	<ul style="list-style-type: none"><li>• File and directory names</li><li>• System output</li><li>• Code</li><li>• Text typed at the command-line</li></ul>
<i>Monospace, italic font</i>	<ul style="list-style-type: none"><li>• Code variables</li><li>• Command-line variables</li></ul>
<b>Monospace, bold font</b>	Emphasis of file and directory names, system output, code, and text typed at the command line

---

 **WARNING!** Indicates that failure to follow directions could result in bodily harm or death.


---

---

 **CAUTION:** Indicates that failure to follow directions could result in damage to equipment or data.


---

---

 **IMPORTANT:** Provides clarifying information or specific instructions.

---


---

 **NOTE:** Provides additional information.

---

## Rack stability

---

 **WARNING!** To reduce the risk of personal injury or damage to equipment:

- Extend leveling jacks to the floor.
  - Ensure that the full weight of the rack rests on the leveling jacks.
  - Install stabilizing feet on the rack.
  - In multiple-rack installations, secure racks together.
  - Extend only one rack component at a time. Racks may become unstable if more than one component is extended.
-



## HP technical support

Telephone numbers for worldwide technical support are listed on the HP support web site:  
<http://www.hp.com/support/>.

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

For continuous quality improvement, calls may be recorded or monitored.

HP strongly recommends that customers sign up online using the Subscriber's choice web site:  
<http://www.hp.com/go/e-updates>.

- Subscribing to this service provides you with e-mail updates on the latest product enhancements, newest versions of drivers, and firmware documentation updates as well as instant access to numerous other product resources.
- After signing up, you can quickly locate your products by selecting **Business support** and then **Storage** under Product Category.

## HP-authorized reseller

For the name of your nearest HP-authorized reseller:

- In the United States, call 1-800-282-6672.
- Elsewhere, visit the HP web site: <http://www.hp.com>. Then click **Contact HP** to find locations and telephone numbers.

## Helpful web sites

For other product information, see the following HP web sites:

- <http://www.hp.com>
- <http://www.hp.com/go/storage>
- <http://www.hp.com/support/>
- <http://www.docs.hp.com>



# 1 XPath OS CLI commands

This chapter lists the MP Router command line interface (CLI) commands in alphabetical order. It also shows their syntax and operands, and provides examples of their usage.

You can access the same information for each command by using the `help` command on the MP Router. For example, to get information about the `aliadd` command, enter `help aliadd` at the command prompt, as follows:

```
switch:admin> help aliadd
```

## agtCfgSet

Configures Simple Network Management Protocol (SNMP) agent system parameters and trap recipient.

### Synopsis

agtcfgset

### Availability

admin

### Description

Use this command to set the `sysDescr`, `sysLocation`, and `sysContact` parameters of the MIB-II system group. All these parameters accept letters, digits, spaces, underscores, hyphens, and percent and dollar signs, with a maximum length of 255 characters.

This command also configures the `sweventTrapLevel`. Only events that have a severity of `swEventTrapLevel` or higher generate a trap. Possible levels include:

- 0   Panic
- 1   Critical
- 2   Error
- 3   Warning
- 4   Info
- 5   Debug

This command allows a maximum of 10 trap recipients. Each trap recipient is composed of a community string and an IP address. The order of the trap recipients has no meaning; traps are sent to all configured recipients. The community string has the same syntax as other system parameters.

### Operands

none

## Examples

In the following example, `sysLocation` is changed from `End User Premise` to `Hardware Lab`. The community string of the first trap recipient is changed from `com23` to `public`, and the IP address of the second trap recipient is changed from `192.168.74.12` to `192.168.74.13`:

```
switch:admin> agtcfgset
Customize MIB-II system variables.....
At each prompt, do one of following:

    <return> to accept current value
    enter the appropriate new value
    <ctrl-D> to skip the rest of configuration and finish
    <ctrl-C> to cancel any changes

sysDesc: [SilkWorm Fibre Application Platform]
sysLocation: [End User Premise] Hardware Lab
sysContact: [Tech Support]
swEventTrapLevel: (0..4) [3]

SNMP community and trap recipient configuration:
You can add maximum 10 trap recipients
type <.> at IP address to delete the recipient
recipient1--Community [com23] public
recipient1--IP address in dot notion [192.168.74.12]
recipient2--Community [contro_center]
recipient2--IP address in dot notion [192.168.74.11] 192.168.74.13
recipient3--Community [unconfigured] ^D
```

## See also

[agtCfgShow](#)

## agtCfgShow

Displays SNMP agent system parameters and trap recipient.

### Synopsis

agtcfgshow

### Availability

all users

### Description

Use this command to display the `sysDescr`, `sysLocation`, and `sysContact` parameters of the MIB-II system group, `swEventTrapLevel`, and trap recipients:

<code>sysDescr</code>	System (router) description (in the MIB-II definition). The default value is <code>MP_ROUTER</code> .												
<code>sysLocation</code>	System location (in MIB-II). The default value is <code>End User Premise</code> .												
<code>sysContact</code>	System contact information. The default is <code>Tech Support</code> .												
<code>swEventTrapLevel</code>	<p>Event trap level in conjunction with the event severity level. When an event occurs, if its severity level is at or below the set value, the SNMP trap, <code>swEventTrap</code>, is sent to the configured trap recipients. By default, this value is 3, which means that any event that has a severity equal to or higher than “warning” causes an <code>swEventTrap</code> to be sent. Possible values include:</p> <table><tr><td>0</td><td>panic</td></tr><tr><td>1</td><td>critical</td></tr><tr><td>2</td><td>error</td></tr><tr><td>3</td><td>warning</td></tr><tr><td>4</td><td>informational</td></tr><tr><td>5</td><td>debug</td></tr></table>	0	panic	1	critical	2	error	3	warning	4	informational	5	debug
0	panic												
1	critical												
2	error												
3	warning												
4	informational												
5	debug												

### Operands

none

### Examples

To display the SNMP agent system parameters and trap recipient:

```
switch:admin> agtcfgshow

Current SNMP Agent Configuration
Customizable MIB-II system variables:
sysDescr = MP_ROUTER
sysLocation = End User Premise
sysContact = Tech Support
swEventTrapLevel = 3

SNMPv2 Trap Recipient Configuration
recipient1--Community=com23
recipient1--IP address=192.168.74.12

recipient2--Community=control_center1
recipient2--IP address=192.168.74.11

recipient3--Community=control_center2
recipient3--IP address=192.168.74.20
```

### See also

[agtCfgSet](#)

## aliAdd

Adds a member to an alias.

### Synopsis

```
aliadd "aliName", "aliMemberList"
```

### Availability

admin

### Description

Use this command to add one or more members to an existing alias, *aliName*. The *aliMemberList* option is one or more semicolon-separated world wide names (WWNs), and domain,port pairs, or iSCSI qualified names (IQNs).

For a description of members, see [aliCreate](#).



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save the change to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

<i>"aliName"</i>	A name for the alias, in quotation marks.
<i>"aliMemberList"</i>	A semicolon-separated list of members, in quotation marks.

### Examples

To add disk arrays to ALIAS\_1:

```
switch:admin> aliadd "ALIAS_1", "20:00:00:e0:8b:01:8f:85; 20,5"
```

### See also

[aliCreate](#)

[aliDelete](#)

[aliRemove](#)

[aliShow](#)

## aliCreate

Creates an alias.

### Synopsis

```
alicreate "aliName", "aliMemberList"
```

### Availability

admin

### Description

Use this command to create a new alias, *aliName*, which must be unique among all other alias or zone object names. The *aliMemberList* operand is one or more semicolon-separated WWNs, domain,port pairs, or iSCSI qualified names (IQNs).

An alias name is one letter followed by any combination and number of letters, digits, and underscore characters. Names are case sensitive: for example, Alias\_1 and alias\_1 are different aliases. Spaces are ignored.

The zone alias member list must have at least one member. Each member is described by a semicolon-separated list of member definitions. The alias member list cannot contain another zone alias.

WWNs are specified as eight hexadecimal numbers separated by colons, for example, 10:00:00:60:69:00:00:8a. Zoning has no knowledge of the fields within a WWN: The 8 bytes are simply compared with the node and port names presented by a device in a login frame—fabric login (FLOGI) or port login (PLOGI). When an alias member is specified by node name, all ports on that device are in the zone. When an alias member is specified by port name, only that single device port is in the zone.

Physical fabric port numbers can also be specified as a pair of decimal numbers, *d*,*p*, where *d* is the MP Router number (domain ID) and *p* is the port number on that MP Router. For example, "6,10" specifies port 10 on MP Router number 6. When an alias member is specified by physical fabric port number, then all devices connected to that port are in the zone. No spaces are allowed.

iSCSI qualified names (IQNs) are specified as *iqn.year-month.unique\_iSCSI\_domain\_ID*; for example:

```
iqn.1991-05.com.microsoft:rst-win2k-pc12  
iqn.2002-12.com.hp:22000004efd712ea
```



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

" <i>aliName</i> "	A name for the alias, in quotation marks.
" <i>aliMemberList</i> "	A semicolon-separated list of members, in quotation marks.



## Examples

To create two aliases, ALIAS\_1 and ALIAS\_2:

```
switch:admin> alicreate "ALIAS_1", "21:00:00:20:37:65:ec:43; 20,3"  
switch:admin> alicreate "ALIAS_2", "iqn.2001-04.com.example:arraysa86"
```

## See also

[aliAdd](#)

[aliDelete](#)

[aliRemove](#)

[aliShow](#)

## aliDelete

Deletes an alias.

### Synopsis

```
alidelete "aliName"
```

### Availability

admin

### Description

Use this command to delete alias *aliName*.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operand is required:

"*aliName*"                      A name for the alias, in quotation marks.

### Examples

To delete the alias ALIAS\_1:

```
switch:admin> alidelete "ALIAS_1"
```

### See also

[aliAdd](#)

[aliCreate](#)

[aliRemove](#)

[aliShow](#)

## aliRemove

Removes a member from an alias.

### Synopsis

```
aliremove "aliName", "aliMemberList"
```

### Availability

admin

### Description

Use this command to remove one or more members from an existing alias.

For the description of members, see the [aliCreate](#) help.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

<code>"aliName"</code>	The name of an existing alias, in quotation marks.
<code>"aliMemberList"</code>	A semicolon-separated list of members (one or more world wide names [WWNs], domain,port pairs, or IQNs), in quotation marks.

### Examples

To remove 20:00:00:e0:8b:01:8f:85 and 20,5 from ALIAS\_1:

```
switch:admin> aliremove "ALIAS_1", "20:00:00:e0:8b:01:8f:85; 20,5"
```

### See also

[aliAdd](#)

[aliCreate](#)

[aliDelete](#)

[aliShow](#)

## aliShow

Displays zone information.

### Synopsis

```
alishow [-i] ["pattern"]
```

### Availability

all users

### Description

Use this command with no parameters to display all zone configuration information (both defined and effective configurations).

If a parameter is specified, it is used as a pattern to match alias names, and those that match in the defined configuration are displayed.

Patterns might contain the following:

- Question mark (?), which matches any single character.
- Asterisk (\*), which matches any string of characters.
- Characters [0–9, a–z, A–Z, \_], which match the character.

See [cfgShow](#) for a description of this display.

### Operands

The following operands are optional:

<i>"pattern"</i>	Can contain any of the valid characters mentioned
-i	Displays iSCSI qualified names (IQNs) instead of World Wide Names (WWNs)

### Examples

To display zone information:

```
switch:admin> alishow -i "ALI*"  
  
alias:  ALIAS_1  
                21:00:00:e0:8b:02:38:d2  
                20,4  
  
alias:  ALIAS_2  
                iqn.2001-04.com.example:arraysa86
```

### See also

[aliAdd](#)  
[aliCreate](#)  
[aliDelete](#)  
[aliRemove](#)  
[cfgShow](#)  
[zoneShow](#)

## altBoot

Boots the switch to the other flash image.

### Synopsis

altboot

### Availability

admin

### Description

Use this command to boot the switch to the inactive bank.



**NOTE:** The command does not boot the switch if there is no XPath OS present in the inactive bank. When a firmware commit for the bank is scheduled, the command prompts the administrator for confirmation of a [firmwareCommit](#) of the inactive bank before booting the switch.

### Operands

none

### Examples

To boot to the inactive bank:

```
switch:admin> altboot
```

### See also

[firmwareCommit](#)

[firmwareDownload](#)

[firmwareShow](#)

[version](#)

## bannerSet

Sets the security banner on the MP Router.

### Synopsis

```
bannerSet [banner]
```

### Availability

admin

### Description

Use this command to set the security banner on the MP Router.

The security banner is a string of alphanumeric characters that is displayed whenever a user tries to log in to an MP Router.

Create the banner by using the *banner* operand or enter `bannerSet` without an operand for an interactive session.

To close the banner text string, enter a period at the beginning of a new line.

### Operands

This command has the following optional operand:

<i>banner</i>	Specifies a text string to display when users log in. The security banner must be between 1 and 116 characters or 1022 characters in interactive mode.  If the banner text length exceeds the maximum allowed with multiple lines of input, the software truncates the input. If the banner text length exceeds the maximum allowed with a single line of input, the software stops accepting characters.
---------------	---

### Examples

To set the banner to "My platform":

```
switch:admin> bannerSet "My platform"
```

To set the banner to "My platform" in interactive mode:

```
switch:admin> bannerSet
Please input context of security banner (press "." RETURN
at the beginning of a newline to finish input):
My platform
.
```

### See also

[bannerShow](#)

## bannerShow

Displays the security banner on the local MP Router.

### Synopsis

`bannershow`

### Availability

all users

### Description

Use this command to display the security banner on the local MP Router.

### Operands

none

### Examples

To display the banner on the local MP Router:

```
switch:admin> bannershow  
My platform.
```

### See also

[bannerSet](#)

## beacon

Blinks the system LED on the MP Router.

### Synopsis

```
beacon [on | off]
```

### Availability

admin

### Description

Use this command to blink the system LED on the MP Router, which makes it easier for administrators to identify a particular MP Router in their data centers. The LED alternately blinks green and amber for a second.



**NOTE:** If an MP Router is disabled and then enabled while beaconing, the MP Router LED no longer blinks.

### Operands

This command has the following optional operands:

on	Turns the beacon on.
off	Turns the beacon off.

### Examples

To turn the beacon on:

```
switch:admin> beacon on
```

To turn the beacon off:

```
switch:admin> beacon off
```

### See also

[switchShow](#)



## burninErrShow

Displays errors stored in the nonvolatile memory on the MP Router during burn-in.

### Synopsis

```
burninerrshow
```

### Availability

admin

### Description

Use this command to display errors stored in nonvolatile memory on the MP Router during burn-in.

### Operands

none

### Examples

To display burn-in errors:

```
switch:admin> burninerrshow
```

### See also

[diagSetBurnin](#)

[diagStopBurnin](#)

## burninStatus

Displays burn-in status.

### Synopsis

burninstatus

### Availability

admin

### Description

Use this command to display the burn-in status of the system. The output contains the state, status, current run number, current command in the run, total commands in the run, and the burn-in script name.

### Operands

none

### Examples

To display the burn-in status:

```
switch:admin> burninstatus
State      Status    Run    Cmd    TotCmds  Script
ABORT      PASS      3      18     41       switchess.sh
```

### See also

[diagSetBurnin](#)

## celloPortTest

Performs a functional test of the MP Router fabric ASIC.

### Synopsis

```
celloporttest [-t port_list] [-r port_list] [-n count]  
[-l length] [-c chk_content]
```

### Availability

admin

### Description

Use this command to test the connection between the port ASICs and the switching ASICs.

All ports involved in the test must be diagnostics-enabled (using [portDiagEnable](#)) prior to running this test.

Because the bridge port (an internal port) cannot be changed to diagnostics mode during normal operation, it can be tested only in the power-on self test (POST) environment.

This test can verify all the possible links if the source ports and destination ports include all user ports and bridge ports.

### Operands

This command has the following optional operands:

<code>-t <i>port_list</i></code>	Specifies a list of source ports. The default value is all ports.
<code>-r <i>port_list</i></code>	Specifies a list of destination ports. The default value is all ports.
<code>-n <i>count</i></code>	Specifies the number of frames to send to each destination. The default value is 100.
<code>-l <i>length</i></code>	Specifies the payload length of the test frames. The default value is 2048.
<code>-c <i>chk_content</i></code>	Verifies frame content at the destination ports. This feature is disabled by default. A value of 1 specifies check contents; 0 specifies do not check contents.

### Examples

To transmit 2048-bytes frames from ports 1 and 2 to ports 3 and 5, use the following command:

```
switch:admin> celloporttest -t 1,2 -r 3,5  
Port Tx fr   Tx bytes    Rx fr   Rx bytes    Bad fr   Order fr Error RSLT  
-----  
0001 00000200 0000000413600 00000000 0000000000000 00000000 00000000 00000 PASS  
0002 00000200 0000000413600 00000000 0000000000000 00000000 00000000 00000 PASS  
0003 00000000 0000000000000 00000200 0000000413600 00000000 00000000 00000 PASS  
0005 00000000 0000000000000 00000200 0000000413600 00000000 00000000 00000 PASS
```

## See also

[crossPortTest](#)

[portDiagDisable](#)

[portDiagEnable](#)

[portLoopbackTest](#)

## cfgActvShow

Displays effective zone configuration information.

### Synopsis

```
cfgactvshow [-i]
```

### Availability

all users

### Description

Use this command to display the effective zone configuration information.

The effective configuration is a single zone configuration that is currently in effect. The devices that an initiator sees are based on this configuration. The effective configuration is built when a specified zone configuration is enabled.

If the `-i` option is used, the iSCSI qualified name (IQN) is displayed; otherwise, WWN format is displayed for iSCSI members.

### Operands

The following operand is optional:

<code>-i</code>	Displays the IQN.
-----------------	-------------------

### Examples

To display the effective zone configuration information:

```
switch:admin> cfgactvshow
Effective configuration:

Cfg:      USA_cfg

Zone:     ZONE_A
          21:01:00:e0:8b:22:a2:38
          20,4

Zone:     ZONE_B
          21:00:00:20:37:c8:97:04
          iqn.2001-04.com.example:arraysa86
```

### See also

[cfgShow](#)

## cfgAdd

Adds a new member to a zone configuration.

### Synopsis

```
cfgadd "cfgName", "cfgMemberList"
```

### Availability

admin

### Description

Use this command to add one or more members to an existing zone configuration, *cfgName*. The *cfgMemberList* operand is a semicolon-separated list of one or more zone names.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

<i>"cfgName"</i>	A name for the zone configuration, in quotation marks.
<i>"cfgMemberList"</i>	A semicolon-separated list of members, in quotation marks.

### Examples

To add a new zone to the configuration USA\_cfg:

```
switch:admin> cfgadd "USA_cfg", "ZONE_C"
```

### See also

[cfgClear](#)  
[cfgDelete](#)  
[cfgDisable](#)  
[cfgEnable](#)  
[cfgRemove](#)  
[cfgSave](#)  
[cfgShow](#)

## cfgClear

Clears all defined zone configurations.

### Synopsis

cfgclear

### Availability

admin

### Description

Use this command to clear all defined zone information from the fabric. Disable all zone configurations before running the command. After clearing the defined zone information, use the [cfgDisable](#) command to disable and clear the zone configuration in nonvolatile memory for all the switches in the fabric.

### Operands

none

### Examples

To clear all zones and nonvolatile memory:

```
switch:admin> cfgclear  
switch:admin> cfgdisable
```

### See also

[cfgDisable](#)

[cfgEnable](#)

[cfgSave](#)

## cfgCreate

Creates a zone configuration.

### Synopsis

```
cfgcreate "cfgName", "cfgMemberList"
```

### Availability

admin

### Description

Use this command to create a new zone configuration, *cfgName*, which cannot be used for any other zone object. *cfgMemberList* is a semicolon-separated list of one or more zone names.

A zone configuration name is a letter followed by any number of letters, digits, and underscores. Names are case sensitive; for example, *Cfg\_1* and *cfg\_1* are different zone configurations. Spaces are ignored.

The zone configuration member list, *cfgMemberList*, has at least one member (empty lists are not allowed).



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

<i>"cfgName"</i>	A name for the zone configuration, in quotation marks.
<i>"cfgMemberList"</i>	A semicolon-separated list of members, in quotation marks.

### Examples

To create a configuration containing two zones, ZONE\_A and ZONE\_B:

```
switch:admin> cfgcreate "USA_cfg", "ZONE_A;ZONE_B"
```

### See also

[cfgAdd](#)  
[cfgClear](#)  
[cfgDelete](#)  
[cfgDisable](#)  
[cfgEnable](#)  
[cfgRemove](#)  
[cfgSave](#)  
[cfgShow](#)



## cfgDelete

Deletes a zone configuration.

### Synopsis

```
cfgdelete "cfgName"
```

### Availability

admin

### Description

Use this command to delete a zone configuration, *cfgName*.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operand is required:

"*cfgName*"                      A name for the zone configuration, in quotation marks.

### Examples

To delete the zone configuration USA\_cfg:

```
switch:admin> cfgdelete "USA_cfg"
```

### See also

[cfgAdd](#)

[cfgClear](#)

[cfgCreate](#)

[cfgDisable](#)

[cfgEnable](#)

[cfgRemove](#)

[cfgSave](#)

[cfgShow](#)

## cfgDisable

Disables a zone configuration.

### Synopsis

cfgdisable

### Availability

admin

### Description

Use this command to disable the current zone configuration. The fabric returns to nonzoning mode, in which all devices are known to each other.

### Operands

none

### Examples

To disable the enabled zone configuration:

```
switch:admin> cfgdisable  
Cfg Disable Successful
```

### See also

[cfgClear](#)

[cfgEnable](#)

[cfgSave](#)

## cfgEnable

Enables a zone configuration.

### Synopsis

```
cfgenable "cfgName"
```

### Availability

admin

### Description

Use this command to commit any defined zone configuration to both volatile and nonvolatile memory and to enable the specified zone configuration.

The specified zone configuration is built by checking for undefined zone names, zone alias names, or other inconsistencies and by expanding zone aliases, removing duplicate entries, and installing the effective configuration.

If the build fails, the previous state is preserved (zoning remains disabled, or the previous effective configuration remains in effect). If the build succeeds, the new configuration replaces the previous configuration.

See the [cfgShow](#) command for a description of defined and effective configurations.

### Operands

The following operand is required:

*"cfgName"*                      A name for the zone configuration, in quotation marks.

### Examples

To enable zone configuration USA\_cfg:

```
switch:admin> cfgenable "USA_cfg"
```

### See also

[cfgClear](#)

[cfgDisable](#)

[cfgSave](#)

[cfgShow](#)

## cfgRemove

Removes a member from a zone configuration.

### Synopsis

```
cfgremove "cfgName", "cfgMemberList"
```

### Availability

admin

### Description

Use this command to remove one or more members from an existing zone configuration, *cfgName*. *cfgMemberList* is a semicolon-separated list of one or more zone names. If all members are removed, the zone configuration is deleted.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

<i>"cfgName"</i>	A name for the zone configuration, in quotation marks.
<i>"cfgMemberList"</i>	A semicolon-separated list of members, in quotation marks.

### Examples

To remove ZONE\_C from zone configuration USA\_cfg:

```
switch:admin> cfgremove "USA_cfg", "ZONE_C"
```

### See also

[cfgEnable](#)

[cfgSave](#)

## cfgSave

Saves zoning configurations to nonvolatile memory.

### Synopsis

cfgsave

### Availability

admin

### Description

Use this command to save the current zone configuration. The defined configuration and the name of the effective configuration are written to nonvolatile memory in all MP Routers in the fabric.

This saved configuration is automatically reloaded by the MP Router on power-up; if a configuration was in effect when it was saved, the same configuration is reinstalled after power-up.

### Operands

none

### Examples

To save the current zone configuration:

```
switch:admin> cfgsave
```

### See also

[cfgClear](#)

[cfgDisable](#)

[cfgSave](#)

[cfgShow](#)

## cfgShow

Displays zone configuration information.

### Synopsis

```
cfgshow [pattern] [-i]
```

### Availability

all users

### Description

Use this command without parameters to display all zone configuration information (both defined and effective configurations).

The defined configuration displays the complete set of all zone objects that have been defined in the fabric. Multiple zone configurations might be defined (although only one can be in effect at a time). The defined configuration is the current state of the administrator's input.

The effective configuration is a single zone configuration that is currently in effect. The devices that an initiator sees are based on this configuration. The effective configuration is built when a specified zone configuration is enabled.

If an operand is specified, it is used as a pattern to match configuration names, and those that match in the defined configuration are displayed.

### Operands

The following operands are optional:

*pattern*

May contain any valid character. Patterns might contain:

- Question mark (?), which matches any single character.
- Asterisk (\*), which matches any string of characters.
- Characters [0–9, a–z, A–Z, \_], which match the character.

-i

Displays the information with the iSCSI name.

## Examples

To display all zone configuration information with the iSCSI name:

```
switch:admin> cfgshow -i
Defined configurations:
Cfg:  USA_cfg  ZONE_A;ZONE_B
Zone:  ZONE_A
      21:01:00:e0:8b:22:a2:38
      20,4
Zone:   ZONE_B
      21:00:00:20:37:c8:97:04
      iqn.2001-04.com.example:arraysa86
Effective configuration:
Cfg:    USA_cfg
Zone:   ZONE_A
      21:01:00:e0:8b:22:a2:38
      20,4
Zone:   ZONE_B
      21:00:00:20:37:c8:97:04
      iqn.2001-04.com.example:arraysa86
```

## See also

[cfgAdd](#)

[cfgClear](#)

[cfgCreate](#)

[cfgDelete](#)

[cfgDisable](#)

[cfgEnable](#)

[cfgRemove](#)

[cfgSave](#)

## cfgSize

Displays size details for the zone database.

### Synopsis

cfgsize

### Availability

all users

### Description

Use this command to display the size details for the zone database.

The size details include the following (all sizes are in bytes):

Zone DB max size	The upper limit for the defined configuration.
Current DB size	The size of the defined configuration.  A defined configuration might not be a committed configuration; for example, if a configuration is modified by a management interface, such as Telnet or API, and not yet committed (using the <a href="#">cfgEnable</a> , <a href="#">cfgDisable</a> , or <a href="#">cfgSave</a> commands), it is defined but not committed. Therefore, the current zone database size might include uncommitted configurations.

See [cfgShow](#) for a description of defined and effective configurations.

### Operands

none

### Examples

To display size details for the defined configuration:

```
switch:admin> cfgsize
Zone DB max size - 130956 bytes
Current DB size - 3724 bytes
```

### See also

[cfgShow](#)



## chassisShow

Displays chassis information.

### Synopsis

chassisshow

### Availability

all users

### Description

Use this command to display general chassis-level hardware status information and configuration. The domain ID is either an unconfigured default value of 100 or a specific configured value. In the former case, the MP Router runtime domain ID can be changed by the fabric.

### Operands

none

### Examples

To display chassis information:

```
switch:admin> chassisshow

Chassis WWN=10:00:EC:60:00:00:01:00      Domain Id=100
Chassis Type=AP7420                      Chassis Serial No.=0000234
Chassis Admin status=enabled             Chassis Part No.=0000A300

Number of power supplies: 2
POWER SUPPLY 1 status is OK
POWER SUPPLY 3 status is NOT PRESENT

Number of fans: 6
Fan 1 status is OK
Fan 2 status is OK
Fan 3 status is OK
Fan 4 status is OK
Fan 5 status is OK
Fan 6 status is OK

ID:          456-777888
Part Num:    230-290-12370
Serial Num:  3456789
Revision Num: A.02
```

### See also

[fanShow](#)

[psShow](#)

[switchShow](#)

## clear

Clears the MP Router screen.

### Synopsis

clear

### Availability

all users

### Description

Use this command to clear the MP Router screen.

### Operands

none

### Examples

To clear the MP Router screen:

```
switch:admin> clear
```

### See also

none

## configDefault

Sets system parameters to factory defaults.

### Synopsis

configdefault

### Availability

admin

### Description

Use this command to set all system parameters, except the following, to their factory defaults:

- Ethernet MAC address
- IP address of the management interfaces
- Subnet mask of the management interfaces
- IP gateway address of the management interfaces
- License keys
- World wide names (WWNs)
- Zoning configuration
- User accounts and passwords
- SNMP configurations

Because some configurations are cached by the system, a reboot is forced after this command.

### Operands

none

### Examples

To set system parameters to their defaults:

```
switch:admin> configdefault
configdefault requires a switch reboot, do you want to proceed? (y, n) y

Configuration restored to factory default

<switch then enters into reboot stage.....>
```

### See also

[configDownload](#)

[configUpload](#)

## configDownload

Restores the MP Router configuration from a host file.

### Synopsis

```
configdownload -h hostName -f fileName [-u userName] [-p password]  
[-t fileTransferProtocol] [-l]
```

### Availability

admin

### Description

Use this command to download the configuration file from a specified FTP or Trivial File Transfer Protocol (TFTP) server. The default FTP account is used if either the user name or password is not specified. The default file transfer protocol is FTP.

You must disable the MP Router before this operation. The IP configuration of the management interface is not immediately changed by this command. The configuration change takes effect at the next reboot.

The `configDownload` command might fail for the following reasons:

- The host is not known to the MP Router.
- The host cannot be reached by the MP Router.
- The user does not have permission on the host.
- The FTP server is not running on the host.

### Operands

The operands *hostName* and *fileName* are required:

<code>-h <i>hostname</i></code>	Specifies the host name of an FTP or a TFTP server.
<code>-f <i>filename</i></code>	Specifies the source file name.

The following operands are optional:

<code>-u <i>userName</i></code>	Specifies the user name for the FTP server.
<code>-p <i>password</i></code>	Specifies the password for the user account.
<code>-t <i>fileTransferProtocol</i></code>	Specifies the file transfer protocol.
<code>-l</code>	Displays the current download configuration.

### Examples

To download configuration file `/misc/config.txt` (if `/misc` is available) from 10.7.32.168:

```
switch:admin> configdownload -h 10.7.32.168 -f /misc/config.txt -u root  
-p password -t ftp
```

To download the configuration in `misc/config.txt` (in this example, `misc` is in the guest home directory) from 10.7.32.168:

```
switch:admin> configdownload -h 10.7.32.168 -f misc/config.txt -u guest  
-p guest
```

### See also

[configUpload](#)

## configShow

Displays current fabric-related MP Router parameters.

### Synopsis

```
configshow [route]
```

### Availability

all users

### Description

Use this command to display current fabric-related MP Router parameters, which can be set through the [configure](#) command. In addition, the `configshow` command displays static Fibre Channel Shortest Path First (FSPF) routes. Route display format includes:

```
route.ucastRoute.Count:route_count
route.ucastRoute.port.domainid:exit_port
```

### Operands

The following operand is optional:

<i>route</i>	Displays only FSPF routes.
--------------	----------------------------

### Examples

To display current fabric-related MP Router parameters:

```
switch:admin> configshow
fabric.ops.domain:                100 (unconfigured default)
fabric.ops.BBCredit:              16
fabric.ops.R_A_TOV:               10000
fabric.ops.E_D_TOV:               2000
fabric.ops.dataFieldSize:         2112
fabric.ops.mode.pidFormat:        1
fabric.ops.WAN_TOV:               0
fabric.ops.MAX_HOP_COUNT:         7
switch.rscn_mode:                 1

Static route:    In-Port    Domain    Out-Port

route.ucastRoute.Count:0
```

### See also

[configDefault](#)

[configure](#)

[switchDisable](#)

[switchEnable](#)

## configUpload

Backs up the MP Router configuration to a host file.

### Synopsis

```
configupload [-h hostName] [-f destinationFileName] [-u userName]  
[-p password] [-t fileTransferProtocol] [-l]
```

### Availability

admin

### Description

Use this command to upload the configuration file to a specified FTP or TFTP server. The default FTP account is used if either the user name or password are not specified. The default file transfer protocol is FTP.

The `configUpload` command might fail for the following reasons:

- The host is not known to the MP Router.
- The host cannot be reached by the MP Router.
- The user does not have permission on the host.
- The FTP server is not running on the host.

### Operands

The following operands are optional:

<code>-h <i>hostname</i></code>	Specifies the host name of an FTP server.
<code>-f <i>destinationFileName</i></code>	Specifies the destination file name.
<code>-u <i>userName</i></code>	Specifies the user name for the FTP server.
<code>-p <i>password</i></code>	Specifies the password for the user account.
<code>-t <i>fileTransferProtocol</i></code>	Specifies the file transfer protocol.
<code>-l</code>	Displays the current upload configuration.

### Examples

To upload the configuration file to `/misc/config.txt` (if `/misc` is available) to 10.7.32.168:

```
appdir:admin> configupload -h 10.7.32.168 -f /misc/config.txt -t ftp
```

To upload the configuration file to `misc/config.txt` (in this example, `misc` is in the guest home directory) to 10.7.32.168:

```
appdir:admin> configupload -h 10.7.32.168 -f misc/config.txt -u guest -p guest
```

### See also

[configDownload](#)

## configure

Sets fabric-related MP Router configuration parameters.

### Synopsis

configure

### Availability

admin

### Description

Use this command to interactively set the following fabric-related MP Router configuration parameters:

Domain	The domain number uniquely identifies the MP Router in a fabric. This value is automatically assigned by the fabric if it is not configured by the user.
BB Credit	The buffer-to-buffer (BB) credit represents the number of frame-receipt buffers available to attached devices. The range of allowed values varies, depending on other system settings.
R_A_TOV	The resource allocation timeout value (R_A_TOV) is displayed in milliseconds. This variable works with the variable E_D_TOV to determine the actions of the MP Router when the next error condition occurs.  Allocated circuit resources with detected errors are not released until the time value has expired. If the condition is resolved prior to the timeout, the internal timeout clock resets and waits for the next error condition.
E_D_TOV	Error detect timeout value (E_D_TOV) is displayed in milliseconds. This timer flags a potential error condition when an expected response is not received (an acknowledgement or reply in response to packet receipt, for example) within the set time limit.
Data Field Size	This specifies the largest possible value, in bytes, for the data frame size. The MP Router advertises this value to other MP Routers in the fabric during construction of the fabric as well as to other devices when they connect to the fabric. Setting this to a value smaller than 2112 can result in decreased performance.
Port ID Format	This specifies the port ID format: <ol style="list-style-type: none"><li>1 Core switch ID format</li><li>2 Extended edge port ID format</li></ol>
WAN_TOV	Wide area network timeout value (WAN_TOV) is displayed in milliseconds. This timer is the maximum frame timeout value for a WAN, if any, interconnecting the Fibre Channel islands. The valid values range from 1000 to R_A_TOV/4.
MAX_HOP_COUNT	Maximum hop count (MAX_HOP_COUNT) is an integer denoting the maximum hops a frame might have to take to reach any destination port from any source port across the fabric.

End-device RSCN  
Transmission Mode

This specifies the transmission mode of registered state change notification (RSCN) extended link service (ELS) to the end devices:

- 0 Single process ID (PID) for each payload
- 1 Multiple PIDs for each payload
- 2 Fabric-format RSCN only

This command cannot be executed on an enabled system; you must first disable the system using the [switchDisable](#) command.

See [Chapter 2](#) for more information.

## Operands

none

## Examples

To configure the fabric-related MP Router configuration parameters:

```
switch:admin> configure
Fabric parameter set. <cr> to skip a parameter
Domain: (1..239 or f(fabric_assign)) [100 unconfigured]
BB Credit: [1..32] [16]
R_A_TOV: (4000..120000) [10000]
E_D_TOV: (1000..5000) [2000] 2500
Data field size: (256..2112) [2112]
Switch PID Address Mode (1..2) [2]
WAN_TOV (1000..R_A_TOV/4 ) [0]
MAX_HOP_COUNT (7..19 ) [7]
End-device RSCN Transmission Mode (0..2) [1]

Fabric configuration set
You must run switchenable to return the switch back to running state.
```

## See also

[configDefault](#)

[configShow](#)

[switchDisable](#)

[switchEnable](#)



## configureZoning

Configures zone configuration parameters.

### Synopsis

configurezoning

### Availability

admin

### Description

Use this command to configure zoning-related parameters. The parameters are as follows:

Disable NodeName Zone Checking	yes	Disables or ignores the node name (node WWN) members in the zone.
	no	Enables the node name (node WWN) members in the zone.
Hard Zoning Supported	yes	Enables hard zoning support.
	no	Disables hard zoning support.

### Operands

none

### Examples

To enable configuration zone parameters:

```
switch:admin> configurezoning

Zoning parameter set. <cr> to skip a parameter
Disable NodeName Zone Checking (yes, y, no, n): [yes] y
Hard Zoning Supported (yes, y, no, n): [no]
Zoning configuration changed
```

### See also

[configZoningShow](#)

## configZoningShow

Displays zoning configuration parameters.

### Synopsis

configzoningshow

### Availability

all users

### Description

Use this command to display zoning-related parameters. The parameters are as follows:

disableNodenameZone	yes	Ignores the node name (node WWN) members in the zone.
	no	Enables the node name (node WWN) members in the zone.
HardZoningSupported	yes	Enables hard zoning support.
	no	Disables hard zoning support.

### Operands

none

### Examples

To display the zoning configuration parameters:

```
switch:admin> configzoningshow

Zoning configuration:

fabric.ops.disableNodenameZone:  yes
fabric.ops.HardZoningSupported:  no
```

### See also

[configureZoning](#)

## crossPortTest

Tests the wire-side transmitting and receiving paths between two ports.

### Synopsis

```
crossporttest [-p port_list] [-n frame_count] [-l length] [-s speed]  
[-m mac]
```

### Availability

admin

### Description

Use this command to test the wire-side connection between two ports. This test generates frames from one port and sends them through an external fiber to another port.

Each participating port is both a frame producer and a frame consumer. The transmitting and receiving operations occur in parallel. The transmitter attempts to send frames, independent of the status of the receiver.

All ports involved in the test must be diagnostics-enabled (using [portDiagEnable](#)) prior to running this test.

### Operands

This command has the following optional operands:

<code>-p <i>port_list</i></code>	Specifies a list of source ports. The default value is all ports.
<code>-n <i>frame_count</i></code>	Specifies the number of frames to send to each destination. The default value is 256.
<code>-l <i>length</i></code>	Specifies the payload length of the test frames. The default value is 1024.
<code>-s <i>speed</i></code>	Specifies Fibre Channel speed mode. The default value is 2 Gb. 0 autonegotiation 1 1 Gb 2 2 Gb
<code>-m <i>mac</i></code>	Specifies the MAC layer to activate. The default is Fibre Channel. 0 Fibre Channel 1 Gigabit Ethernet

### Examples

To send out 1024 frames from ports 12 and 13 in Fibre Channel mode:

```
switch:admin> crossporttest -p 12-13 -n 1024 -l 2048  
crossporttest -p 12-13 -n 1024 -l 2048 -s 2 -m 0  
Port Tx fr   Tx bytes   Rx fr   Rx bytes   Deli Size In   Out  RSLT  
----  
000C 00000400 000000207000 00000400 000000207000 0000 0000 0000 0000 PASS  
000D 00000400 000000207000 00000400 000000207000 0000 0000 0000 0000 PASS
```

To send out 1024 frames from ports 12 and 13 in gigabit Ethernet mode:

```
switch:admin> crossporttest -p 12-13 -n 1024 -l 1024 -m 1
crossporttest -p 12-13 -n 1024 -l 1024 -s 2 -m 1
```

Port	Tx fr	Tx bytes	Rx fr	Rx bytes	CrcT	CrcR	BadT	BadR	RSLT
000C	00000400	000000104800	00000400	000000104800	0000	0000	0000	0000	PASS
000D	00000400	000000104800	00000400	000000104800	0000	0000	0000	0000	PASS

## See also

[portDiagDisable](#)

[portDiagEnable](#)

[portLoopbackTest](#)

[spinSilk](#)

# date

Displays or sets date and time.

## Synopsis

```
date [-nu] [-r seconds] [+format]
```

```
date [[[[cc]yy]mm]dd]hh]mm[.ss]
```

## Description

Use this command to display the current date and time. Providing arguments formats the date and time in a user-defined method or sets the date. Only admin can set the date. The date is read-only if [tsClockServer](#) is set to an external time server.

## Operands

This command has the following optional operands:

- |    |   |
|----|---|
| -n | The utility named <code>timed</code> (a time server daemon) synchronizes the clocks on groups of machines. By default, if <code>timed</code> is running, <code>date</code> sets the time on all the machines in the local group. The <code>-n</code> option stops <code>date</code> from setting the time for any machine other than the current machine. |
| -r | Prints the date and time that is <i>seconds</i> from the epoch.   |
| -u | Displays or sets the date in UTC (Coordinated Universal Time).  |

An operand with a leading plus sign (+) signals a user-defined format string that specifies the format in which to display the date and time. The format string can contain any of the conversion specifications described in the `strftime` manual page, as well as any arbitrary text. A `<newline>` character is always displayed after the characters specified by the format string.

The format string for the default display is:

```
%a %b %e %H:%M:%S %Z %Y
```

If an operand does not have a leading plus sign, it is interpreted as a value for setting the current date and time of the system. The canonical representation for setting the date and time is:

- |           |  |
|-----------|--|
| <i>cc</i> | The first two digits of the year (the century).  |
| <i>yy</i> | The second two digits of the year. If <i>yy</i> is specified but <i>cc</i> is not, a value for <i>yy</i> between 69 and 99 results in a <i>cc</i> value of 19. Otherwise, a <i>cc</i> value of 20 is used. |
| <i>mm</i> | The month of the year, from 01 to 12.  |
| <i>dd</i> | The day of the month, from 01 to 31.   |
| <i>hh</i> | The hour of the day, from 00 to 23.  |
| <i>mm</i> | The minute of the hour, from 00 to 59.   |
| <i>ss</i> | The second of the minute, from 00 to 61.   |

Everything but the minutes is optional.

Time changes for Daylight Saving time, Standard time, leap seconds, and leap years are handled automatically.

## Examples

To display the date and time:

```
switch:admin> date '+DATE: %m/%d/%y%nTIME: %H:%M:%S'
```

To set the date to June 13, 2003, 4:27 PM:

```
switch:admin> date 8506131627
```

To set the time to 2:32 PM without modifying the date:

```
switch:admin> date 1432
```

## See also

[timeZoneSet](#)

[tsClockServer](#)

## diagDisablePost

Disables power-on self-test (POST) diagnostics.

### Synopsis

`diagdisablepost`

### Availability

admin

### Description

Use this command to disable POST. POST is skipped on the next MP Router reboot.

### Operands

none

### Examples

To disable POST:

```
switch:admin> diagdisablepost
```

### See also

[diagEnablePost](#)

[diagPost](#)

## diagEnablePost

Enables POST diagnostics.

### Synopsis

diagenablepost

### Availability

admin

### Description

Use this command to enable POST. Reboot the MP Router after enabling it to run POST.

### Operands

none

### Examples

To enable POST:

```
switch:admin> diagenablepost
```

### See also

[diagDisablePost](#)

[diagPost](#)



## diagHelp

Displays diagnostic commands.

### Synopsis

diaghelp

### Availability

admin

### Description

Use this command to display diagnostic commands.

### Operands

none

### Examples

To display the list of diagnostic commands:

```
switch:admin> diaghelp
burninerrshow      Display the burn-in errors of the switch
burninstatus       Display the diagnostics burnin status
crossporttest      Test the wire-side transmitting and receiving
                   paths between two ports
diagdisablepost    Disable diagnostic POST
diagenablepost     Enable diagnostic POST
diaghelp           Display list of diagnostic commands
diagportmem        Test particular port's specific memory
diagportmemarm     Test particular port's memory subsystem by
                   port's internal CPU
diagportmailbox     Functional tests to test internal service
                   modules of port asic (Figero)
diagpost           Set or display diagnostic POST configuration
diagsetburnin      Initialize the switch for a burnin run
diagsetcycle       Set diagnostic script parameters
diagstopburnin     Terminate burnin run on a switch
portdiagenable     Enable port for diagnostic
portdiagdisable    Disable port for diagnostic
portdiagclear      Clear diagnostic error on a port
portloopbacktest   Test the wire-side transmitting and receiving
                   paths of the port
spinsilk           Test both the wire-side and crossbar-side
                   operations of the port
celloportest       Functional test of switch fabric ports
```

### See also

none

## diagPortMailbox

Tests the internal service modules of the port ASIC.

### Synopsis

```
diagportmailbox -p port_index -m mailbox_service_type
```

### Availability

admin

### Description

Use this command to test the accelerator logic of the port ASIC. The actual tests are executed by the embedded port processors.

The port involved in the test must be diagnostics-enabled (using [portDiagEnable](#)) prior to running this test.

### Operands

This command has the following required operands:

<code>-p <i>port_index</i></code>	Specifies a port index (0 to 15). The default value is port 0.																								
<code>-m <i>mailbox_service_type</i></code>	Specifies a mailbox service type. The default value is 1. The possible values include: <table><tr><td>1</td><td>Test queue manager</td></tr><tr><td>2</td><td>Test feeder engine</td></tr><tr><td>3</td><td>Test lookup service</td></tr><tr><td>4</td><td>Test D-TCM CRC</td></tr><tr><td>5</td><td>Test SRAM counter</td></tr><tr><td>6</td><td>Test copy SRAM to D-TCM</td></tr><tr><td>7</td><td>Test copy D-TCM to SRAM</td></tr><tr><td>8</td><td>Test copy wire DRAM to scratch</td></tr><tr><td>9</td><td>Test copy Xbar DRAM to scratch</td></tr><tr><td>10</td><td>Test copy scratch to wire DRAM</td></tr><tr><td>11</td><td>Test copy scratch to Xbar DRAM</td></tr><tr><td>12</td><td>Test copy D-TCM to scratch</td></tr></table>	1	Test queue manager	2	Test feeder engine	3	Test lookup service	4	Test D-TCM CRC	5	Test SRAM counter	6	Test copy SRAM to D-TCM	7	Test copy D-TCM to SRAM	8	Test copy wire DRAM to scratch	9	Test copy Xbar DRAM to scratch	10	Test copy scratch to wire DRAM	11	Test copy scratch to Xbar DRAM	12	Test copy D-TCM to scratch
1	Test queue manager																								
2	Test feeder engine																								
3	Test lookup service																								
4	Test D-TCM CRC																								
5	Test SRAM counter																								
6	Test copy SRAM to D-TCM																								
7	Test copy D-TCM to SRAM																								
8	Test copy wire DRAM to scratch																								
9	Test copy Xbar DRAM to scratch																								
10	Test copy scratch to wire DRAM																								
11	Test copy scratch to Xbar DRAM																								
12	Test copy D-TCM to scratch																								

### Examples

To test port 0 internal module service of copying wire D-TCM to CRC:

```
switch:admin> diagportmailbox -p 0 -m 4  
PASS: diagportmailbox port[0] mbox_type[1] result[0]
```

### See also

[portDiagDisable](#)

[portDiagEnable](#)

## diagPortMem

Tests the specific memory of a particular port.

### Synopsis

```
diagportmem -p port_index -m memory_type [-t test_data_pattern]  
[-f testing_size_factor]
```

### Availability

admin

### Description

Use this command to test the memory subsystem of a particular port. The data write/read test executes the address and data bus verifications by running address-hashing patterns or incremental-data patterns in the entire memory. When all memories are written with patterns, the memories are read and compared against the data previously written.

The port involved in the test must be diagnostics-enabled (using [portDiagEnable](#)) prior to running this test; otherwise, the command is rejected.

### Operands

This command has the following operands:

<i>-p port_index</i>	Specifies a port index (0 to 15). The default value is 0.																		
<i>-m memory_type</i>	Specifies a specific memory type inside the port. Possible values include: <table><tr><td>1</td><td>Test context memory</td></tr><tr><td>2</td><td>Test cell buffer memory</td></tr><tr><td>3</td><td>Test frame sequence memory</td></tr><tr><td>4</td><td>Test wire RX buffer</td></tr><tr><td>5</td><td>Test wire TX buffer</td></tr><tr><td>6</td><td>Test frame classification memory</td></tr><tr><td>7</td><td>Test code SRAM</td></tr><tr><td>8</td><td>Test data SRAM</td></tr><tr><td>9</td><td>Test scratch memory</td></tr></table>	1	Test context memory	2	Test cell buffer memory	3	Test frame sequence memory	4	Test wire RX buffer	5	Test wire TX buffer	6	Test frame classification memory	7	Test code SRAM	8	Test data SRAM	9	Test scratch memory
1	Test context memory																		
2	Test cell buffer memory																		
3	Test frame sequence memory																		
4	Test wire RX buffer																		
5	Test wire TX buffer																		
6	Test frame classification memory																		
7	Test code SRAM																		
8	Test data SRAM																		
9	Test scratch memory																		
<i>-t test_data_pattern</i>	Specifies the testing data pattern. Possible values include: <table><tr><td>1</td><td>Address-hashing pattern (default)</td></tr><tr><td>2</td><td>Incremental-data pattern</td></tr></table>	1	Address-hashing pattern (default)	2	Incremental-data pattern														
1	Address-hashing pattern (default)																		
2	Incremental-data pattern																		

*-f testing\_size\_factor*

Specifies testing size. The default is 1 (all). Possible values include:

- 1           Review the entire tested memory type block
- 2 to 8      Test size (memory type block size / factor)

## Examples

To test port 0 context memory by using incremental-data pattern:

```
switch:admin> diagportmem -p 0 -m 1 -t 2  
PASS: diagportmailbox port[0] mbox_type[1] result[0]
```

## See also

[diagPortMemArm](#)

[portDiagDisable](#)

[portDiagEnable](#)

## diagPortMemArm

Tests a particular memory subsystem by internal port CPU.

### Synopsis

```
diagportmemarm -p port_index -m memory_type  
[-f testing_size_factor]
```

### Availability

admin

### Description

Use this command to test particular port-specific memories. The tests are run by the internal port CPU. The data write/read test executes the address and data bus verifications by running both the address-hashing pattern and the incremental-data pattern in the entire memory. When all memories are written with patterns, the memories are read and compared against the data previously written.

The port involved in the test must be diagnostics-enabled (using [portDiagEnable](#)) prior to running this test.

### Operands

This command has the following operands:

<code>-p <i>port_index</i></code>	Specifies a port index (0 to 15). The default value is 0.				
<code>-m <i>memory_type</i></code>	Specifies a specific memory type inside the port. Possible values include: <table><tr><td>1</td><td>Tests wire DRAM (default)</td></tr><tr><td>2</td><td>Tests Xbar DRAM</td></tr></table>	1	Tests wire DRAM (default)	2	Tests Xbar DRAM
1	Tests wire DRAM (default)				
2	Tests Xbar DRAM				
<code>-f <i>testing_size_factor</i></code>	Specifies testing size. Possible values include: <table><tr><td>1</td><td>Review the entire specified memory type block (default)</td></tr><tr><td>2</td><td>Test size (memory type block size / factor)</td></tr></table>	1	Review the entire specified memory type block (default)	2	Test size (memory type block size / factor)
1	Review the entire specified memory type block (default)				
2	Test size (memory type block size / factor)				

### Examples

To test port 0 wire DRAM:

```
switch:admin> diagportmemarm -p 0 -m 1  
PASS: diagportmemarm port[0] mem_type[1] factor[1] result[0]
```

### See also

[diagPortMem](#)

[portDiagDisable](#)

[portDiagEnable](#)

## diagPost

Sets or displays diagnostic power-on self-test (POST) configuration.

### Synopsis

```
diagpost [mode]
```

### Availability

admin

### Description

This command enables and disables POST. For Post to run, the MP Router must be rebooted after enabling POST.



**NOTE:** By default, POST is enabled.

### Operands

This command has the following operand:

<i>mode</i>	Specifies the mode as 1 (enabled) or 0 (disabled). If a mode is not specified, the currently set mode is displayed.
-------------	---

### Examples

To enable POST:

```
switch:admin> diagpost 1
```

### See also

[diagDisablePost](#)

[diagEnablePost](#)

## diagSetBurnin

Initializes the MP Router for a burn-in run.

### Synopsis

```
diagsetburnin [script | -current]
```

### Availability

admin

### Description

Use this command to set up the MP Router burn-in parameters for the registered burn-in script. The burn-in starts at the next reboot.

The errors and activity logs are stored in nonvolatile memory. The activity log of the script is saved in `/var/log/scriptname.1.log`. The errors produced are available in the error log saved in `/var/log/scriptname.1.log.fail`. When power cycles occur, the burn-in activity is restarted at the test run that was interrupted at the time of the power cycle. This command does not require a reboot to take effect.



**NOTE:** The MP Router runs in diagnostic mode during and after the burn-in cycle. Supported commands in this mode are [diagSetBurnin](#), [diagSetCycle](#), [diagStopBurnin](#), [burninErrShow](#), and [burninStatus](#). Users can access these commands through the Telnet session. To return to normal mode, either wait for the burn-in cycle to complete or enter the [diagStopBurnin](#) command and then reboot the MP Router.

### Operands

This command has the following operands:

<i>script</i>	Specifies the name of the burn-in script to run.
<i>-current</i>	Sets the name of the burn-in script to the current burn-in script.

### Examples

To initialize the MP Router for a burn-in run:

```
switch:admin> diagsetburnin -current
existing script is: switchburnin.sh
diagpost: post mode set to 1
diagmode: diag mode set to burnin
Burnin mode is Enabled.
Removing all log files in /var/log.
burninSetName switchburnin.sh -noupdate
burnin name is now switchburnin.sh
Config update Succeeded

WARNING: The switch has been set up for a burn-in run. The burn-in will
take effect at the next reboot. To cancel the burn-in operation, enter
the diagstopburnin command.
```

### See also

[diagSetCycle](#)  
[diagStopBurnin](#)

## diagSetCycle

Sets diagnostic script parameters.

### Synopsis

```
diagsetcycle script [-show | -default | [-keyword value ... ]]
```

### Availability

admin

### Description

Use this command to provide an interactive method to update diagnostic command parameters. Specifying *script* without parameters displays all configuration variables used by the specified script and initiates an interactive session. Using the full stretched (that is, specifying the keyword and value pair) option parameters updates the variables noninteractively.

In interactive mode, the current value, default value, and purpose of each variable are displayed for each variable. Enter a new value to update the current value, which is stored in the configuration database; otherwise, the value does not change. The change does not require a reboot to take effect.

### Operands

This command has the following operands:

<i>script</i>	Specifies which script parameters to edit.
-show	Displays the parameters for a diagnostic script specified by <i>script</i> .
-default	Sets script parameters to default values.
-keyword <i>value</i>	Updates script parameters. The <i>keyword</i> is the keyword to update (see keywords in the example that follows); the <i>value</i> should be specified manually.

### Examples

To set diagnostic script parameters:

```
switch:admin> diagsetcycle switchburnin.sh -show
CURRENT- KEYWORD: DEFAULT
  1- log_length: 1
  1- number_of_runs: 1
  1- volt_show_run: 1
  1- asic_rev_run: 1
  1- temp_show_run: 1
  1- sfp_show_run: 1
  .....

```

### See also

[diagSetBurnin](#)



## diagStopBurnin

Terminates the burn-in run on an MP Router.

### Synopsis

diagstopburnin

### Availability

admin

### Description

Use this command to determine which process ID (PID) is running burn-in on an MP Router and to terminate that activity. The burn-in script handles the logging cleanup. The change does not require a reboot to take effect.

### Operands

none

### Examples

To terminate the burn-in run:

```
switch:admin> diagstopburnin
No burnin script active.
switchbeacon: done burnin script!!!
burninerrshow output:
errLog is empty
diagpost: post mode set to 1
diagmode: diag mode set to normal
```

### See also

[diagSetBurnin](#)

## diagUpload

Uploads diagnostic information from daemons and an application to an FTP server.

### Synopsis

```
diagupload -h hostName -d destinationDirectory  
-u userName -p password [-f fileName]
```

### Availability

admin

### Description

Use this command to upload the core dumps and [supportShow](#) information in the `/usr/cores` directory or to upload a specified core-dump file to a specified FTP server.

The `diagUpload` command might fail for the following reasons:

- The host is not known to the MP Router.
- The host cannot be reached by the MP Router.
- The user does not have permission on the host.
- The FTP server is not running on the host.

### Operands

The following operands are required:

<code>-h <i>hostName</i></code>	Specifies the host name of an FTP server.
<code>-d <i>destinationDirectory</i></code>	Specifies the destination directory.
<code>-u <i>userName</i></code>	Specifies the user name for the FTP server.
<code>-p <i>password</i></code>	Specifies the password for the user account.

The following operand is optional:

<code>-f <i>fileName</i></code>	Specifies a core-dump file name. Without the <code>-f</code> option, the <a href="#">supportShow</a> command runs internally to collect diagnostic information and all core dumps upload to the specified location.
---------------------------------	---

### Examples

To upload core dumps to `/tmp` (if `/tmp` is available) to 10.7.32.168:

```
switch:admin> diagupload -h 10.7.32.168 -d /tmp -u root -p password
```

To upload a specified core-dump file to `tmp` (in this example, `tmp` is in the `root` home directory) to 10.7.32.168:

```
switch:admin> diagupload -h 10.7.32.168 -d tmp -u root -p password  
-f /usr/cores/xyz.core
```

### See also

[supportShow](#)

## dlsReset

Turns off the dynamic load sharing option.

### Synopsis

```
dlsreset
```

### Availability

admin

### Description

Use this command to prevent load sharing when a fabric change occurs; otherwise, working ports could be affected. See [dlsSet](#) for a full description of dynamic load sharing.

### Operands

none

### Examples

To turn off dynamic load sharing:

```
switch:admin> dlsreset  
DLS feature disabled
```

### See also

[dlsSet](#)

[dlsShow](#)

[iodReset](#)

[iodSet](#)

[iodShow](#)

[trunkReset](#)

[trunkSet](#)

[trunkShow](#)

## dlsSet

Turns on the dynamic load sharing option.

### Synopsis

dlsset

### Availability

admin

### Description

Use this command to allow load sharing when a fabric change occurs.

Routing is done on a per-source-port basis. This means that all the traffic coming in from a port (either E\_Port or Fx\_Port) directed to the same remote domain is routed through the same output E\_Port.

To optimize fabric utilization, when there are multiple equivalent paths to a remote MP Router, traffic is shared among all the paths. Load sharing occurs when a MP Router reboots. In addition, if dynamic load sharing is enabled, the optimal load sharing algorithm is recomputed every time a change in the fabric occurs (an E\_Port or an Nx\_Port goes up or down).

A dynamic load sharing algorithm considers the link capability of the E\_Ports and the Nx\_Ports when assigning routes. For example, the algorithm attempts to assign a 2-Gb/s Nx\_Port to a 2-Gb/s E\_Port (if available) instead of to a 1-Gb/s E\_Port.

If dynamic load sharing is turned off, load sharing is performed only at boot time, when an Nx\_Port comes up, or when a new interswitch link (ISL) comes up. Optimal load sharing is rarely achieved with this setting.

Dynamic load sharing is turned on by default.

### Notes

When dynamic load sharing is enabled, routing changes might affect working ports. For example, if an Fx\_Port goes down, another Fx\_Port might be rerouted from one E\_Port to a different E\_Port. The MP Router minimizes the number of routing changes, but some are necessary to achieve optimal load sharing. These changes might affect the application, especially if the in-order delivery option is set. With the in-order delivery option (see [iodSet](#)), routes are briefly not available (for a few seconds) after a fabric change. In addition, some frame loss might occur. No frame loss occurs if in-order delivery is off, but there is still a short period of time when traffic is not forwarded. This period of time is significantly shorter than when in-order delivery is on and is usually less than 1 second.

Trunking overrides the dynamic load sharing setting.

### Operands

none

### Examples

To turn on dynamic load sharing:

```
switch:admin> dlsset
DLS feature enabled
```

## See also

[dlsReset](#)

[dlsShow](#)

[iodReset](#)

[iodSet](#)

[iodShow](#)

[nbrStateShow](#)

[topologyShow](#)

[trunkReset](#)

[trunkSet](#)

[trunkShow](#)

[urouteShow](#)

## dlsShow

Displays the state of the dynamic load sharing option.

### Synopsis

dlsshow

### Availability

all users

### Description

Use this command to see whether dynamic load sharing is on (set) or off.

### Operands

none

### Examples

To display the state of the dynamic load sharing option:

```
switch:admin> dlsshow  
DLS is set
```

### See also

[dlsReset](#)

[dlsSet](#)

[iodReset](#)

[iodSet](#)

[iodShow](#)

[trunkSet](#)

[trunkShow](#)

## errClear

Clears the syslog messages.

### Synopsis

```
errclear
```

### Availability

admin

### Description

Use this command to clear the syslog messages.

### Operands

none

### Examples

To clear the syslog messages of the MP Router:

```
switch:admin> errclear
```

### See also

[errShow](#)

## errShow

Display the syslog messages.

### Synopsis

```
errshow [-a]
```

### Availability

all users

### Description

This command displays the syslog messages, prompting the user to press **Enter** between each message. See the *HP StorageWorks XPath OS 7.4.x system error messages reference guide* for descriptions of possible error messages.

### Operands

This command has the following optional operand:

-a	Specifies that the syslog messages are displayed without pagination.
----	--

### Examples

To display the syslog messages of the MP Router:

```
switch:admin> errshow
```

### See also

[errClear](#)



## eventActionSet

Sets the action type for a predefined event.

### Synopsis

```
eventactionset eventId actionType
```

### Availability

admin

### Description

Use this command to display or set the action type for a predefined event.

### Operands

The following operands are required for set operation:

<i>eventId</i>	Event identification number.
<i>actionType</i>	The available action types are:
<i>none</i>	No action is taken.
<i>log</i>	Places the event in a RAM-based event log.
<i>snmptrap</i>	Generates a trap for the event.
<i>logandtrap</i>	Combines both <i>log</i> and <i>snmptrap</i> actions for the event.
<i>persist</i>	Places the event in a persistent RAM-based event log and in the <i>logandtrap</i> mode.

### Examples

To change event action type for event ID 6:

```
switch:admin> eventactionset 6 logandtrap
Event Action for eventId 6 is set to: logandtrap
```

### See also

[eventActionShow](#)

[eventSeverity](#)

## eventActionShow

Displays the action type for all predefined events.

### Synopsis

```
eventactionshow [eventID]
```

### Availability

all users

### Description

Use this command to display the action type for all predefined events.

### Operands

The following operand is optional:

*eventID* Specifies a predefined event.

If an operand is specified, the action type of the specified event is displayed.

### Examples

To display the event action type for event 10:

```
switch:admin> eventactionshow 10
```

EventId	EventDesc	Action
10	Fan removed	logandtrap

To display the event action type for all predefined events:

```
switch:admin> eventactionshow
```

### See also

[eventActionSet](#)

## eventClear

Clears the MP Router event log.

### Synopsis

```
eventclear [-p]
```

### Availability

admin

### Description

Use this command to clear the MP Router event log.

### Operands

The following operand is optional:

`-p` Clear events *only* from the persistent event log.

If no operand is specified, this command clears the event log in RAM; the persistent event log is not cleared. If the `-p` option is specified, *only* the persistent event log is cleared and the error log in RAM is not cleared.

### Examples

To clear the event log in RAM:

```
switch:admin> eventclear
```

To clear the persistent event log:

```
switch:admin> eventclear -p
```

### See also

[eventShow](#)

[eventShowByNum](#)

## eventLogSize

Displays or sets the event log size.

### Synopsis

```
eventlogsize [LogSize]
```

### Availability

admin

### Description

Use this command to display or to set the event log size, which controls the maximum number of events captured in the event log. The event log wraps around if the number of events captured reaches the log size. The event log size is between 100 and 2000, in increments of 100. By default, the event log size is 1000.



**NOTE:** Events currently captured in the event log are cleared when the event log size is changed.

The number of events logged in the event log table is one less than the event log size.

### Operands

The following operand is optional:

<i>LogSize</i>	Specifies the event log size.
----------------	-------------------------------

### Examples

To display the event log size:

```
switch:admin> eventlogsize
Event Log Size is: 1000
```

To set the event log size to 1200:

```
switch:admin> eventlogsize 1200
Event Log Size is: 1200
```

### See also

[eventShow](#)

[eventShowByNum](#)

## eventSeverity

Displays or sets the severity level for a predefined event.

### Synopsis

```
eventseverity eventId severityLevel
```

### Availability

admin

### Description

Use this command to display or set the severity level for a predefined event.

### Operands

The following operands are required:

<i>eventId</i>	Event identification number												
<i>severityLevel</i>	The available severity levels are: <table><tr><td>panic</td><td>Indicates a failure that causes the MP Router to malfunction.</td></tr><tr><td>critical</td><td>Indicates a failure that affects data traffic among ports.</td></tr><tr><td>error</td><td>Indicates a failure that affects data traffic on a single port.</td></tr><tr><td>warning</td><td>Indicates a temporary failure that does not affect data traffic.</td></tr><tr><td>info</td><td>Indicates an informational event.</td></tr><tr><td>debug</td><td>Indicates an event for debugging purposes.</td></tr></table>	panic	Indicates a failure that causes the MP Router to malfunction.	critical	Indicates a failure that affects data traffic among ports.	error	Indicates a failure that affects data traffic on a single port.	warning	Indicates a temporary failure that does not affect data traffic.	info	Indicates an informational event.	debug	Indicates an event for debugging purposes.
panic	Indicates a failure that causes the MP Router to malfunction.												
critical	Indicates a failure that affects data traffic among ports.												
error	Indicates a failure that affects data traffic on a single port.												
warning	Indicates a temporary failure that does not affect data traffic.												
info	Indicates an informational event.												
debug	Indicates an event for debugging purposes.												

### Examples

To display the event severity level for event ID 6:

```
switch:admin> eventseverity 6
Event severity for event ID 6 is: info
```

To change the event severity level to error for event ID 6:

```
switch:admin> eventseverity 6 error
Event severity for event ID 6 sets to: error
```

### See also

[eventActionSet](#)

[eventSeverityShow](#)

[eventShow](#)

## eventSeverityShow

Displays the severity level for all predefined events.

### Synopsis

eventseverityshow

### Availability

all users

### Description

Use this command to display the severity level for all predefined events.

### Operands

none

### Examples

To display event severity level:

```
switch:admin> eventseverityshow
```

### See also

[eventSeverity](#)

## eventShow

Displays the events in the event log.

### Synopsis

```
eventshow [-m minutes] [-a] [-n numOfEvents]
```

### Availability

all users

### Description

Use this command to display all events in the event log by default. To display events that occurred within a previous number of minutes, use the `-m` operand.. The `-a` operand displays events without pagination. The `-n` operand specifies the number of events to display. The timestamp field of each event includes date, time, and GMT offset.

The output of the `eventShow` command includes events recorded in the persistent error log during previous runtime cycles and event messages logged in the current runtime cycle.

There are two types of memory in which log entries are stored: RAM and persistent RAM. All events are placed in the RAM-based event log. Only events from RAM are displayed by the `eventShow` command. Certain events also are stored in persistent RAM. When an MP Router reboots, RAM clears and then reloads with log entries from persistent RAM. Running the `eventShow` command after a reboot displays a log of the persistent events and any additional new log entries during bootup.

Both the persistent RAM log and the RAM log are limited in space and are managed as circular buffers. When either log overflows, new entries overwrite the old entries.

### Operands

The following operands are optional:

<code>-m <i>minutes</i></code>	Causes only events that occurred within the number of minutes specified by <i>minutes</i> to be displayed.
<code>-a</code>	Specifies that events be displayed without pagination; otherwise, press <b>Enter</b> when prompted to display the next event log page.
<code>-n <i>numOfEvents</i></code>	Specifies the number of events to display.

### Examples

To display all events in the event log:

```
switch:admin> eventshow
```

To display events that occurred within the last five minutes:

```
switch:admin> eventshow 5
```

To display all events, without pagination:

```
switch:admin> eventshow -a
```

To display the most recent 30 events, without pagination:

```
switch:admin> eventshow -a -n 30
```

### See also

[eventShowByNum](#)

## eventShowByNum

Displays events in the event log between specific starting and ending event numbers.

### Synopsis

```
eventshowbynum startingEventNumber endingEventNumber  
[-a] [-n numOfEvents]
```

### Availability

all users

### Description

Use this command to display events in the event log between specific starting and ending event numbers. This command displays all events if the starting event number is 1 and the ending event number is -1. The timestamp field of each event includes date, time, and GMT offset.

### Operands

The following operands are required:

<i>startingEventNumber</i>	Specifies the starting event number.
<i>endingEventNumber</i>	Specifies the ending event number.

The following operands are optional:

-a	Displays events without page breaks.
-n <i>numOfEvents</i>	Specifies the number of events to display.

### Examples

To display events between event number 10 and 100:

```
switch:admin> eventshowbynum 10 100
```

To display all events above event number 200:

```
switch:admin> eventshowbynum 200 -1
```

To display all events above event number 200, without pagination:

```
switch:admin> eventshowbynum 200 -1 -a
```

To display the most recent 30 events, without pagination:

```
switch:admin> eventshowbynum 1 -1 -a -n 30
```

### See also

[eventShow](#)



## exit

Terminates the shell.

### Synopsis

`exit`

### Availability

all users

### Description

Use this command to terminate the shell and log out of the MP Router.

### Operands

none

### Examples

To log out of the MP Router:

```
switch:admin> exit
```

### See also

[quit](#)

## fabLogClear

Clears the internal debug messages of the fabric controller.

### Synopsis

fablogclear

### Availability

admin

### Description

Use this command to clear the internal debug messages of the fabric controller.

### Operands

none

### Examples

To clear the internal debug messages of the fabric controller:

```
switch:admin> fablogclear
```

### See also

[fabLogShow](#)

## fabLogShow

Displays the internal debug messages of the fabric controller.

### Synopsis

```
fablogshow [-f]
```

### Availability

admin

### Description

Use this command to display the fabric internal debug messages of the fabric controller.

### Operands

This command has the following optional operand:

-f	Wait for additional data to append when fabLogShow reaches the end of the log.
----	--

### Examples

To display the internal debug messages of the fabric controller:

```
switch:admin> fablogshow
Time |P |OXID| Log info
-----
16:05:30.650|00|ffff| Fabctl event PORT_MODE_EVENT sent to Port 0
16:05:30.650|00|ffff| st_chg: RnFCSM_LinkState to RnFCSM_SendELP
16:05:30.800|01|08c4| Xbar frame In. sid=fffffd,did=fffffd,cmd=10,len=208
16:05:30.800|01|ffff| st_chg: RnFCSM_SendELP to RnFCSM_SendELP
16:05:30.800|01|08c4| Xbar frame out. sid=fffffd,did=fffffd,cmd=2,len=148
16:05:30.802|01|ffff| Fabctl event ELP_UNSUCC sent to Port 1
16:05:30.802|01|ffff| st_chg: RnFCSM_SendELP to RnFCSM_ProcessESC
16:05:30.804|00|08c5| Xbar frame In. sid=fffffd,did=fffffd,cmd=10,len=208
16:05:30.804|00|ffff| st_chg: RnFCSM_SendELP to RnFCSM_SendELP
16:05:30.804|00|08c5| Xbar frame out. sid=fffffd,did=fffffd,cmd=2,len=148
16:05:30.805|00|ffff| Fabctl event ELP_UNSUCC sent to Port 0
16:05:30.805|00|ffff| st_chg: RnFCSM_SendELP to RnFCSM_ProcessESC
16:05:30.811|01|00ff| Port Msg linkstatus = 2
16:05:30.811|01|ffff| Fabctl event PORT_MODE_EVENT sent to Port 1
16:05:30.811|01|ffff| Fabctl event ESC_SUPP sent to Port 1
16:05:30.811|01|ffff| st_chg: RnFCSM_ProcessESC to RnFCSM_EPortOperation
16:05:30.811|01|ffff| Fabctl event E_PORT_INITED sent to Port 1
16:05:30.812|01|ffff| st_chg: RnFCSM_EPortOperation to RnFCSM_SendELP
16:05:30.812|01|00be| Xbar frame out. sid=fffffd,did=fffffd,cmd=11,len=60
16:05:30.814|00|00ff| Port Msg linkstatus = 2
16:05:30.814|00|ffff| Fabctl event PORT_MODE_EVENT sent to Port 0
16:05:30.814|00|ffff| Fabctl event ESC_SUPP sent to Port 0
16:05:30.815|00|ffff| st_chg: RnFCSM_ProcessESC to RnFCSM_EPortOperation
16:05:30.815|00|ffff| Fabctl event E_PORT_INITED sent to Port 0
16:05:30.815|00|ffff| st_chg: RnFCSM_EPortOperation to RnFCSM_SendELP
16:05:30.815|00|00bf| Xbar frame out. sid=fffffd,did=fffffd,cmd=11,len=60
16:05:30.815|00|00ff| Port Msg linkstatus = 2
16:05:30.815|00|ffff| Fabctl event PORT_MODE_EVENT sent to Port 0
16:05:30.818|01|08c8| Xbar frame In. sid=fffffd,did=fffffd,cmd=11,len=60
16:05:30.819|01|08c8| Xbar frame out. sid=fffffd,did=fffffd,cmd=2,len=60
16:05:30.824|01|00be| Xbar frame In. sid=fffffd,did=fffffd,cmd=2,len=60
16:05:30.824|01|00be| SWILSReply - cmd = 11
```

### See also

[fabLogClear](#)

## fabricShow

Displays fabric membership information.

### Synopsis

fabricshow

### Availability

all users

### Description

Use this command to display information about MP Routers and switches in the fabric.

If the fabric is reconfiguring, some or all MP Routers might not be shown; otherwise, the following fields are displayed:

Switch ID	The domain_ID and embedded port D_ID
World Wide Name	The world wide name (WWN)
Enet IP Addr	The Ethernet IP address
Name	The symbolic name (> indicates the principal MP Router)

### Operands

none

### Examples

To display information about MP Routers in a fabric:

```
switch:admin> fabricshow
```

SwitchID	Worldwide Name	Enet IP Addr	Name
2:fffc02	10:00:00:60:69:22:0b:3e	10.7.32.67	"switch"
100:fffc64	10:00:00:05:1e:00:08:00	10.7.32.249	>"MY_SYS_NAME"

The fabric has 2 switches

### See also

[switchShow](#)

[topologyShow](#)

## fanShow

Displays fan status.

### Synopsis

fanshow

### Availability

all users

### Description

Use this command to display current fan status. The number of fans might vary with different chassis types. Fan status is indexed by sequential numbers and includes OK, FAIL, and NOT\_PRESENT. Speed settings are NORMAL and HIGH. If the fan status is OK, the Actual\_speed field displays the fan RPMs; otherwise, it displays N/A. The [chassisShow](#) command also provides the fan status.

See the [setFanSpeed](#) command for information on fan speed settings.

### Operands

none

### Examples

To display fan status:

```
switch:admin> fanshow

Fan 1 Status:OK Set_speed:NORMAL Actual_speed:2721 RPM
Fan 2 Status:OK Set_speed:NORMAL Actual_speed:2721 RPM
Fan 3 Status:OK Set_speed:NORMAL Actual_speed:2657 RPM
Fan 4 Status:NOT_PRESENT
Fan 5 Status:NOT_PRESENT
Fan 6 Status:NOT_PRESENT
```

### See also

[chassisShow](#)

[psShow](#)

[setFanSpeed](#)

## fastBoot

Reboots the MP Router, bypassing POST diagnostics.

### Synopsis

`fastboot`

### Availability

admin

### Description

This command is equivalent to the [reboot](#) command except that `fastBoot` causes the startup routine to omit POST diagnostics (for the next reboot only).



**CAUTION:** This command does not require a confirmation. The MP Router immediately enters the reboot stage after the command is issued.

### Operands

none

### Examples

To reboot the MP Router:

```
switch:admin> fastboot
```

### See also

[diagDisablePost](#)

[diagEnablePost](#)

[diagPost](#)

[reboot](#)

## fazoneAdd

Adds a Fabric Assist (FA) zone.

### Synopsis

```
fazoneAdd "fazoneName","fazoneMemberList"
```

### Availability

admin

### Description

This command adds a member to an existing FA zone.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

*"fazoneName"*

Specifies the name for the Fabric Assist zone, enclosed in quotation marks.

*"fazoneMemberList"*

Specifies a list of Fabric Assist Zone members, enclosed in quotation marks, with each member separated by a semicolon. A member can be specified by one or more of the following methods:

- Enter a fabric domain and area number pair. View the area numbers for ports using the [switchShow](#) command.
- WWN
- Fabric Assist zone alias name

### Examples

To add aliases for some disk arrays to the Fabric Assist zone, Blue\_fazone:

```
switch:admin> fazoneAdd "Blue_fazone", "array3; array4; array5"
```

To add a Fabric Assist host member to Fabric Assist zone, Blue\_fazone:

```
switch:admin> fazoneAdd "Blue_fazone", "H{5,6}"
```

## See also

- [cfgEnable](#)
- [cfgSave](#)
- [cfgShow](#)
- [fazoneCreate](#)
- [fazoneDelete](#)
- [fazoneRemove](#)
- [fazoneShow](#)
- [switchShow](#)



## fazoneCreate

Creates a Fabric Assist (FA) zone.

### Synopsis

```
fazonecreate "fazoneName","fazoneMemberList"
```

### Availability

admin

### Description

Use this command to create a new FA zone, *fazoneName*, which must be unique among all other zone objects. *fazoneMemberList* is a semicolon-separated list of one or more WWNs, domain,port pairs, FA zone alias names, or it can be exactly one FA host member.

A FA zone name is a C-language-style name. It must begin with a letter and be followed by any number of letters, digits, and underscore characters. Names are case sensitive; for example, *Fazone\_1* and *fazone\_1* are different Fabric Assist zones. Spaces are ignored.

The FA zone member list must have at least one member. Empty lists are not allowed.

When a FA zone member is specified by physical fabric port number, any and all devices connected to that port are in the FA zone.

WWNs are specified as eight hexadecimal numbers separated by colons, for example, 10:00:00:60:69:00:00:8a. Zoning has no knowledge of the fields within a WWN; the 8 bytes are simply compared with the node and port names presented by a device in a login frame (FLOGI or PLOGI).

When a FA zone member is specified by node name, then all ports on that device are in the FA zone. When a FA zone member is specified by port name, only that single device port is in the FA zone. Zone alias names have the same format as FA zone names and are created with the [aliCreate](#) command. The alias must resolve to a list of one or more physical fabric port numbers, or WWNs, or to a FA host.

A FA host member is defined by wrapping the physical fabric port or a physical device (a WWN) between "H{and }". For example, "H{5,6}" and "H{10:00:00:60:69:00:00:8a}" are FA hosts. The type of FA zone members used to define a FA zone may be mixed and matched. For example, a FA zone defined with the members 2,12; 2,14; 10:00:00:60:69:00:00:8a would contain devices connected to MP Router 2, ports 12 and 14, and the device with a WWN of 10:00:00:60:69:00:00:8a (either node name or port name—whichever port in the fabric it is connected to.)



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

## Operands

The following operands are required:

*"fazoneName"*

Specify a name for the Fabric Assist zone. The name must be enclosed in quotation marks.

*"fazoneMemberList"*

Specify a member or list of members to add to a Fabric Assist zone. The list must be enclosed in quotation marks, and each member must be separated by a semicolon. A member can be specified by one or more of the following methods:

- A fabric domain and area number pair. (View the area numbers for ports using the [switchShow](#) command.)
- WWNs.
- Fabric Assist zone alias names.
- Exactly one Fabric Assist host member.

## Examples

To create two Fabric Assist zones using a mixture of port numbers and Fabric Assist zone aliases:

```
switch:admin> fazoneCreate "fazone1", "H{1,1}; array1; 1,2; array2"  
switch:admin> fazoneCreate "fazone2", "1,0; H{1,2}; array2"
```

## See also

[aliCreate](#)

[cfgEnable](#)

[cfgSave](#)

[cfgShow](#)

[fazoneAdd](#)

[fazoneDelete](#)

[fazoneRemove](#)

[fazoneShow](#)

[switchShow](#)

## fazoneDelete

Deletes a Fabric Assist (FA) zone.

### Synopsis

```
fazoneDelete "fazoneName"
```

### Availability

admin

### Description

Use this command to delete an existing FA zone on a fabric.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operand is required:

"*fazoneName*"                      Specifies the name of the zone to be deleted, in quotation marks.

### Examples

To delete a Fabric Assist zone:

```
switch:admin> fazoneDelete "Blue_fazone"
```

### See also

[fazoneAdd](#)

[fazoneCreate](#)

[fazoneShow](#)

## fazoneRemove

Removes members from a Fabric Assist (FA) zone.

### Synopsis

```
fazoneRemove "fazoneName", "fazoneMemberList"
```

### Availability

admin

### Description

Use this command to remove one or more members from an existing Fabric Assist zone.

Each deleted member must be found by an exact string match. Order is important when removing multiple members of a FA zone. For example, if a Fabric Assist zone contains array2; array3; array4, then removing array4; array3 fails, but removing array3; array4 succeeds. If issuing this command results in all members being removed, the FA zone is deleted.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

*"fazoneName"*

Specifies a name for the FA zone, in quotation marks.

*"fazoneMemberList"*

Specifies a member or list of members to remove from a FA zone. The list must be enclosed in quotation marks, and each member must be separated by a semicolon. A member can be specified by one or more of the following methods:

- A fabric domain and area number pair. View the area numbers for ports using the [switchShow](#) command.
- WWNs
- Fabric Assist zone alias names
- Exactly one Fabric Assist host member

### Examples

To remove array2 from the FA zone, Blue\_fazone:

```
switch:admin> fazoneRemove "Blue_fazone", "array2"
```

### See also

[fazoneAdd](#)

[fazoneCreate](#)

[fazoneDelete](#)

[fazoneShow](#)

## fazoneShow

Displays Fabric Assist (FA) zone information.

### Synopsis

fazoneshow [*pattern*]

### Availability

all users

### Description

Use this command to display FA zone information. Specifying this command with no parameters or with the second parameter set to zero displays all Fabric Assist zone configuration information for both defined and effective configurations. Defined configuration information is shown from the transaction buffer. See the [cfgShow](#) command for a description of this display.

If an operand is specified, it is used as a pattern to match Fabric Assist zone names, and those that match in the defined configuration are displayed.

### Operands

This command has the following optional operand:

*pattern*

Specifies a value to search for the name of a Fabric Assist zone. This can be any portable operating system interface (POSIX)-style expression. Patterns can contain:

- Question mark (?), which matches any single character
- Asterisk (\*), which matches any string of characters
- Ranges that match any character within the range, for example, [0–9] or [a–f]

### Examples

To display all FA zones beginning with the letters A through C:

```
switch:admin> fazoneShow "[A-C]*"
fazone:  Blue_fazone
1,1; array1; 1,2; array2
```

### See also

[cfgShow](#)

[fazoneAdd](#)

[fazoneCreate](#)

[fazoneDelete](#)

[fazoneRemove](#)

## fcipShow

Displays the status of an FCIP port.

### Synopsis

```
fcipshow port [-r]
```

### Availability

admin

### Description

Use this command to display all configuration information and the current status for an FCIP port. In addition, this command displays FCIP layer counters.

### Operands

This command has the following operands:

<i>port</i>	Specifies the FCIP port (required)
<i>-r</i>	Resets the counters (optional)

### Examples

To display information about FCIP port 8:

```
switch:admin> fcipshow 8

----- fcip protocol info(port 8) -----
State:                Configured                Current
Local IP addr:        192.168.250.6                192.168.250.6
Remote IP addr:        0.0.0.0                    0.0.0.0
Link Bandwidth:        1000                        1000
Jumbo Support:         enabled                    enabled
WAN_TOV timeout:      enabled                    enabled
Remote WWN:            00:00:00:00:00:00:00:00      00:00:00:00:00:00:00:00

Time sync state:      synchronized (Since Tue Jul 13 17:48:27 2004)

in_frame_ip:          137378
in_frame_fc:           4008800
out_frame_ip:          4008800
out_frame_fc:          137378
in_octet_ip:           13007680
in_octet_fc:           8043998376
out_octet_ip:          8043998376
out_octet_fc:          806207

(continued on next page)
```

```
error_frame_ip:    0
error_frame_fc:    0
error_resync:      0
drop_frame_fc:     0
drop_frame_ip:     0
frame_timeout:     0
authen_failure:    0
```

To display information about FCIP port 3 and reset counters:

```
switch:admin> fcipshow 3 -r
```

## See also

[portCfgFcip](#)

[portCfgGige](#)

[portShow](#)

## fcfConfigure

Sets MP Router configuration parameters.

### Synopsis

`fcfconfigure`

### Availability

admin

### Description

Use this command to interactively set the MP Router configuration parameter for this MP Router.

This command cannot be executed on an enabled system; you must first disable the system using the [switchDisable](#) command.

Use this command to set the configuration parameter for this MP Router. The parameter is defined as follows:

Backbone fabric ID	A fabric ID uniquely identifies a fabric in MP router configurations. The backbone fabric is the fabric attached to the U_Ports (such as E/F_Ports) of this MP Router. The backbone fabric ID must be unique across all MP Router-connected fabrics.
--------------------	--

### Operands

none

### Examples

To configure the MP Router:

```
switch:admin> fcfconfigure
FC Router parameter set. <cr> to skip a parameter
Backbone fabric ID: (1-128)[100]
You must run switchenable to return the switch back to online state.
```

### See also

[switchDisable](#)

[switchEnable](#)



## fcrFabricShow

Displays MP Routers in a backbone fabric.

### Synopsis

fcrfabricshow

### Availability

all users

### Description

This command displays the MP Routers that exist in an MP Router backbone fabric and displays information about these MP Routers.

If there are no active MP Routers present in the backbone fabric, a message is displayed that says that no active MP Routers have been found. An active MP Router is an MP Router with at least one enabled EX\_Port.

The following output is displayed for each MP Router in the backbone fabric:

WWN	The WWN of the MP Router.						
Domain ID	The domain ID of the MP Router. This domain ID is relevant only in the backbone fabric.						
Info	The Ethernet IP address and name of the MP Router						
EX_Ports	The following information is displayed for each MP Router's active EX_Ports: <table><tr><td>EX_Port</td><td>The port number for the EX_Port</td></tr><tr><td>FID</td><td>The fabric ID of the EX_Port</td></tr><tr><td>Neighbor Switch Info (WWN,enet IP, name)</td><td>The WWN, the Ethernet IP address and switch name of the switch attached to the EX_Port.</td></tr></table>	EX_Port	The port number for the EX_Port	FID	The fabric ID of the EX_Port	Neighbor Switch Info (WWN,enet IP, name)	The WWN, the Ethernet IP address and switch name of the switch attached to the EX_Port.
EX_Port	The port number for the EX_Port						
FID	The fabric ID of the EX_Port						
Neighbor Switch Info (WWN,enet IP, name)	The WWN, the Ethernet IP address and switch name of the switch attached to the EX_Port.						

### Operands

none

### Examples

To display the MP Routers in the backbone fabric:

```
fcr_mars_8:admin> fcrfabricshow
FCR WWN: 10:00:00:05:1e:13:59:00, Dom ID: 2, Info: 10.32.156.52, "fcr_mars_9"
EX_Port      FID      Neighbor Switch Info (WWN,enet IP, name)
-----
7           10      00:00:00:00:00:00:00:00, 10.32.156.33, "mojo_10"
4           116     00:00:00:00:00:00:00:00, 10.32.156.34, "mojo_11"
5           116     00:00:00:00:00:00:00:00, 10.32.156.34, "mojo_11"

(continued on next page)
```

```
FCR WWN: 10:00:00:05:1e:12:e0:00, Dom ID: 100, Info: 10.32.156.50, "fcr_mars_8"
EX_Port      FID      Neighbor Switch Info (WWN, enet IP, name)
-----
      4         95      00:00:00:00:00:00:00:00,  10.32.156.31, "mojo_5"
      5         95      00:00:00:00:00:00:00:00,  10.32.156.31, "mojo_5"
      6         95      00:00:00:00:00:00:00:00,  10.32.156.31, "mojo_5"
```

## See also

[fcrPhyDevShow](#)

[fcrProxyDevShow](#)

[fcrRouteShow](#)

[lsanZoneShow](#)

[switchShow](#)

Displays MP Router physical device information.

### Synopsis

```
fcRphydevshow [-a all] [-f fabricid] [-w wwn]
```

### Availability

all users

### Description

This command displays the physical (real) devices that are configured to be exported to other fabrics. A device is considered to be configured to be exported to another fabric if it is a member of a Logical Storage Area Network (LSAN) zone. The device is displayed only if it is discovered in the EX\_Port-attached fabric's Name Server (for example, the device is online).

Physical device information is available only for physical devices that exist in fabrics attached to EX\_Ports of MP Routers on the same backbone fabric as this MP Router.

The default output displays only physical device information relevant to this MP Router. Relevant physical devices include physical devices that are configured to be exported from fabrics attached to this MP Router's EX\_Ports.

The physical devices are listed by fabric. Search for physical devices based on a fabric ID and port world wide name with the `-f` and `-w` operands, respectively. The message `No device found` appears if there is no physical device information available at this MP Router.

The output displays the following columns:

Device Exists in Fabric	The fabric where the physical device exists.
WWN	The WWN of the device port.
Physical PID	The port ID of the real/physical device. (This port ID is relevant only on the fabric specified by the Device Exists in Fabric column.)

### Operands

This command has the following optional operands:

<code>-a all</code>	Displays all physical devices for all MP Routers in the same backbone fabric, whether or not they are relevant to this MP Router.
<code>-f <i>fabricid</i></code>	Displays the physical devices in the specified fabric.
<code>-w <i>wwn</i></code>	Displays the physical devices with the specified port WWN.

## Examples

To display the physical devices relevant to this MP Router:

```
switch:admin> fcrphydevshow
```

Device	WWN	Physical
Exists		PID
in Fabric		
2	10:00:00:00:c9:2b:6a:68	c70000
3	50:05:07:65:05:84:09:0e	0100ef
3	50:05:07:65:05:84:0b:83	0100e8

## See also

[fcrFabricShow](#)

[fcrProxyDevShow](#)

[fcrRouteShow](#)

[lsanZoneShow](#)

[switchShow](#)

## fcProxyConfig

Displays and configures proxy devices presented by an MP Router.

### Synopsis

```
fcproxyconfig [-s slot [importedFID devWWN slot]] [-r remove [importedFID devWWN] ]
```

### Availability

admin

### Description

Use this command to display or set the persistent configuration of proxy devices presented by the local MP Router.

If no optional parameter is given, the command displays the persistent proxy device configuration; otherwise, it sets the specified attributes to their new values.

The proxy device must be inactive prior to setting or clearing persistent attributes. Disabling EX\_Ports (for example, using the [portDisable](#) command) attached to the relevant edge fabric, removing the device from the appropriate LSAN zones, or disabling the physical device are valid methods of ensuring a proxy device is inactive.

Persistent proxy device configuration attributes apply to the local MP Router. Multiple MP Routers attached to the same edge fabric coordinate to present the same proxy devices. As a result, persistent proxy device configurations must be consistent across all MP Routers attached to the same edge fabric or results are unpredictable. If the persistent proxy device configuration is not altered by the administrator, no action is required. If the configuration is altered, then care must be taken to ensure consistency across all MP Routers attached to the same edge fabric.

The following information is displayed if no optional parameter is given:

Edge FID	The imported fabric ID of the proxy device.
Device WWN	The port World Wide Name of the device.
Slot	The slot used for the device WWN.

The device WWN-to-slot association is persistently stored. The slot format is *XXYYH*, where *XX* specifies the translate domain port number and *YY* specifies the *AL\_PA* value or the low 8 bits of the port ID of the proxy device (valid values include *01H* to *FFH*). The port ID of the proxy device is derived from the PID format (for example, native, core, and extended edge) and the proxy device slot.

The message *All slots empty* is returned if no proxy device WWN is stored in any slot for all edge fabrics.

## Operands

This command has the following operands:

`-s importedFID devWWN slot` The `-s` option adds the specified WWN (format: `xx:xx:xx:xx:xx:xx:xx:xx`) to the specified slot (format `xyyyh`, where `xx` is the translate domain port number, `yy` is the AL\_PA) for the edge fabric specified (1 to 128).

An error message could be displayed, depending on the condition that caused the error, as follows:

- If the WWN does not exist in any slot for the specified edge fabric, this message is displayed:

```
WWN does not exist in any proxy device slot.
```

- If all slots are used for the specified edge fabric, this message is displayed:

```
Too many proxy slots configured. Remove some unused proxy device WWNs from their slots using the -r option and try again.
```

- If the specified slot already contains an entry, this message is displayed:

```
The specified slot already contains a WWN, overwrite?(y)
```

`-r edgeFID WWN`

The `-r` option removes the specified WWN (format: `xx:xx:xx:xx:xx:xx:xx:xx`) from its slot for the edge fabric specified by `edgeFID` (1 to 128).

The following message displays if the WWN does not exist in any slot for the specified edge fabric:

```
WWN does not exist in any proxy device slot.
```

## Examples

To display persistent proxy device configuration:

```
fcr:admin> fcrproxyconfig
```

Edge FID	Device WWN	Slot
002	50:05:07:65:05:84:08:d7	f001
002	50:05:07:65:05:84:0a:7b	f002
002	22:00:00:20:37:c3:11:71	f001
002	22:00:00:20:37:c3:1a:8a	f002
003	10:00:00:00:c9:2b:6a:2c	f001
004	10:00:00:00:c9:2b:6a:2c	f001

To persistently configure device WWN 00:11:22:33:44:55:66:77 to use slot f101h in fabric 5:

```
fcr:admin> fcrproxyconfig -s 5 00:11:22:33:44:55:66:77, f101
```

To remove device WWN 00:11:22:33:44:55:66:77 from its persistent slot in fabric 5:

```
fcr:admin> fcrproxyconfig -r 5 00:11:22:33:44:55:66:77  
WWN deleted from proxy device slot
```

## See also

[fcrPhyDevShow](#)

[fcrProxyDevShow](#)

[fcrXlateConfig](#)

[lsanZoneShow](#)

[switchShow](#)

## fcProxyDevShow

Displays MP Router proxy device information.

### Synopsis

```
fcproxydevshow [-a all] [-f fabricid] [-w wwn]
```

### Availability

all users

### Description

This command displays the proxy devices presented by FCR EX\_Ports and information about the proxy devices.

A proxy device is a virtual device presented to a fabric by an MP Router. A proxy device represents a real device on another edge fabric. When a proxy device is created in a fabric, the real device is considered to be imported into this fabric. The presence of a proxy device is required for interfabric device communication. The fabric sees the proxy device as a real Fibre Channel device. It has a name server entry and is assigned a valid port ID.

Proxy device information is available only for proxy devices that are presented by MP Routers on the same backbone fabric as this MP Router.

The default output displays only proxy device information relevant to this MP Router. Relevant proxy devices include proxy devices created by this MP Router (devices imported by this MP Router).

The proxy devices are listed by fabric. The message `No proxy device found` is displayed if there is no proxy device information available at this MP Router.

Each line of output displays the following information:

Proxy Created in Fabric	The fabric where the proxy device has been created.	
WWN	The World Wide Name of the device port.	
Proxy PID	The port ID of the proxy device.	
Device Exists in Fabric	This port ID is relevant only on the fabric specified by the Proxy Created in Fabric column.	
Physical PID	The fabric where the real device represented by this proxy device exists.	
	The port ID of the real/physical device.	
	This port ID is relevant only on the fabric specified by the Device Exists in Fabric column.	
State	Imported	Proxy device has been imported into the fabric.
	Initializing	The proxy device is being initialized and will soon be imported into the fabric.



## Operands

This command has the following optional operands:

- a all                      Displays all proxy devices for all MP Routers in the same backbone fabric, whether or not they are relevant to this MP Router.
- f *fabricid*              Displays proxy devices in the specified fabric.
- w *wwn*                    Displays proxy devices with the specified port WWN.

## Examples

To display the proxy devices relevant to this MP Router:

```
switch:admin> fcrproxydevshow
```

Proxy Created in Fabric	WWN	Proxy PID	Device Exists in Fabric	Physical PID	State
2	50:05:07:65:05:84:09:0e	01f001	3	0100ef	Imported
2	50:05:07:65:05:84:0b:83	01f000	3	0100e8	Imported
3	10:00:00:00:c9:2b:6a:68	02f000	2	c70000	Imported

## See also

[fcrFabricShow](#)

[fcrPhyDevShow](#)

[fcrRouteShow](#)

[lsanZoneShow](#)

[switchShow](#)

# fcResourceShow

Displays MP Router physical resource usage.

## Synopsis

fcresourceshow

## Availability

all users

## Description

Use this command to display MP Router available resources. The maximum number allowed versus the number currently used is displayed for the various resources.

The output is as follows:

LSAN Zones	The maximum versus currently used LSAN zones.				
LSAN Devices	The maximum versus currently used LSAN device database entries. Each proxy or physical device constitutes an entry.				
Proxy Device Slots	The maximum versus currently used proxy device slots. A proxy device is presented to an edge fabric as being connected to a translate domain <i>slot</i> . A <i>slot</i> is the port number and AL_PA combination. The slot-to-device WWN association is persistently stored.				
Phantom Node WWN	The maximum versus currently used phantom MP Router node WWNs. Phantom MP Routers require node WWNs for FSPF and manageability purposes.				
Phantom Port WWN	The maximum versus currently used phantom domain port WWNs. Phantom domain ports require port WWNs for manageability purposes. Phantom domain ports include ports connecting front and translate domains (virtual ISLs), translate domain ports for proxy devices, and EX_Ports.				
Port Limits	Displays per-physical-port (EX_Port) resources: <table><tr><td>Max proxy devices</td><td>The maximum versus currently used proxy device entries.</td></tr><tr><td>Max NR_Ports</td><td>The maximum versus currently used NR_Port entries. Destination NR_port entries are stored at every physical port for routing decisions.</td></tr></table>	Max proxy devices	The maximum versus currently used proxy device entries.	Max NR_Ports	The maximum versus currently used NR_Port entries. Destination NR_port entries are stored at every physical port for routing decisions.
Max proxy devices	The maximum versus currently used proxy device entries.				
Max NR_Ports	The maximum versus currently used NR_Port entries. Destination NR_port entries are stored at every physical port for routing decisions.				
Currently Used(row 1: proxy, row2: NR_Ports):					

## Operands

none

## Examples

To display the resource usage for the local MP Router:

```
fcr:admin> fcrresourceshow
```

Daemon Limits:

	Max Allowed	Currently Used
LSAN Zones:	1000	4
LSAN Devices:	10000	14
Proxy Device Slots:	10000	4

	WWN Pool Size	Allocated
Phantom Node WWN:	4096	11
Phantom Port WWN:	16384	37

Port Limits:

Max proxy devices: 2000

Max NR\_Ports: 1000

Currently Used(row 1: proxy, row2: NR\_Ports):

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2
0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	3

## See also

[fcrFabricShow](#)

[fcrProxyDevShow](#)

[fcrRouteShow](#)

[lsanZoneShow](#)

[switchShow](#)

## fcRouteShow

Displays MP Router route information.

### Synopsis

`fcrrouteshow`

### Availability

all users

### Description

Use this command to display routes through the MP Router backbone fabric to accessible destination edge fabrics.

An MP Router backbone fabric is the fabric that contains the E/F\_Ports of this MP Router and routes interfabric traffic between edge fabrics, creating a *meta-SAN*.

There are MP Router NR\_Ports that reside on the backbone fabric. MP Router NR\_Ports send/receive interfabric traffic. There is a one-to-one relationship between an NR\_Port on a backbone fabric and an EX\_Port. NR\_Port technology enables EX\_Ports to exchange traffic across an intermediate fabric. NR\_Ports are addressable entities on the backbone fabric and have port IDs relevant to the backbone fabric.

Because this XPath OS release does not support cascaded backbone/intermediate fabrics, an NR\_Port provides a path to a single fabric with a single link cost. Multiple NR\_Ports can provide paths to the same destination fabric.

The message `No routes found` is displayed if there is no route information available at this MP Router. There will be no route information available if there are no EX\_Ports configured at this MP Router.

Each line of output displays the following information:

Destination Fabric ID	The destination fabric.
NR_Port PID	The port ID of the NR_Port. This port ID is relevant only on the backbone fabric. This NR_Port has a route to the destination fabric identified by the Destination Fabric ID column.
FCRP Cost	The FCRP cost (for routing decisions) for this NR_Port. In this release, the FCRP cost is always the same (1000) for all NR_Ports.
WWN of the Principal Switch in the Dest Fabric	The world wide name of the principal switch in the destination fabric specified by the Destination Fabric ID column. This is useful for correlating the fabric ID listed in the Destination Fabric ID column with the actual fabric.

### Operands

none

## Examples

To display the route information:

```
switch:admin> fcrrouteshow
```

Destination Fabric Id	NR_Port PID	FCRP Cost	WWN of Principal Switch in the Dest. Fabric
5	650200	1000	10:00:00:60:69:90:10:ba
5	650300	1000	10:00:00:60:69:90:10:ba
7	660200	1000	10:00:00:60:69:c0:6e:84
9	660400	1000	10:00:00:60:69:10:57:c3

## See also

[fcrConfigure](#)

[fcrFabricShow](#)

[fcrPhyDevShow](#)

[fcrProxyDevShow](#)

[fcrXlateConfig](#)

## fcrXlateConfig

Displays or persistently configures a translate (xlate) domain's domain ID.

### Synopsis

```
fcrxlateconfig [-r remove] edge FabricIdremote FabricIdpreferred DomainId
```

### Availability

admin

### Description

Use this command to display a translate domain's domain ID or change the preferred domain ID.

A translate domain is a phantom domain created by a Fibre Channel (FC) router. FC routers emulate proxy devices representing real devices in remote fabrics. These proxy devices are emulated to be connected to translate domains. Translate domains are presented to a fabric as residing topologically behind front phantom domains (domains created by an EX\_Port). In every EX\_Port-attached edge fabric, there can be a translate domain for every MP Router-accessible remote fabric.

During a fabric build, the translate domain requests a domain ID from the principal MP Router in the EX\_Port-attached edge fabric. The domain ID requested is the preferred domain ID. The preferred domain ID can be set by a user when the translate domain is not active and is persistently saved. The principal MP Router attempts to provide the translate domain with the requested domain ID but might not provide it if there are domain ID conflicts with other domains in the fabric. If the requested domain ID (for example, the preferred domain ID) is unavailable, the domain ID assignment is completely at the discretion of the principal MP Router. The assigned domain ID is persistently stored and is used as the preferred domain ID in the future.

### Operands

This command had the following operands:

<i>-r remove</i>	Removes the configured domain ID (clears configured domain ID). The translate domain must be inactive to remove the preferred domain ID.
<i>edgeFabricId</i>	Specifies the fabric ID of the fabric that contains the translate domain. Valid values are 1 to 128.
<i>remoteFabricId</i>	Specifies the fabric ID of the remote fabric represented by this translate domain. Valid values are 1 to 128.
<i>preferredDomainId</i>	Specifies the preferred domain ID of the translate phantom. Valid values are 1 to 239.

### Examples

To display the translate domain configuration:

```
fcr:admin> fcrxlateconfig
```

EdgeFid	RemoteFid	Domain	OwnerDid	XlateWWN
002	003	001	N/A	N/A
004	005	002	009	50:00:51:e1:30:30:0f:05
005	004	003	015	50:00:51:e1:30:30:0f:04

To set the preferred domain ID of the translate domain created in fabric 2 that represents remote fabric 3 to a value of 1:

```
switch:admin> fcrxlateconfig 2 3 1
xlate domain already configured, overwrite?(y) y
***** 2 3 1
```

To clear the preferred domain ID of the translate domain created in fabric 2 that represents remote fabric 3:

```
switch:admin> fcrxlateconfig -r 2 3
xlate domain deleted
```

## See also

[portCfgEXPort](#)

[portDisable](#)

[portEnable](#)

[portShow](#)

[portStart](#)

[portStop](#)

## firmwareCommit

Commits the current firmware image to the alternate bank.

### Synopsis

`firmwarecommit`

### Availability

admin

### Description

Use this command to commit (copy) the current firmware image from the primary partition to the secondary partition.

To maintain the integrity of the firmware image in the flash memory, the `firmwareDownload` command initially updates only the secondary partition. When the download completes successfully and the system reboots, the system swaps the partitions so that the primary partition (with the old firmware) becomes the secondary, and the secondary partition (with the new firmware) becomes the primary.

By default, the `firmwareDownload` command automatically copies the new firmware to the secondary partition after the reboot. If you decide to disable the autocommit (-n) option when running `firmwareDownload` after the system is rebooted, you must execute the `firmwareCommit` command. `firmwareCommit` copies the primary partition (with new firmware) to the secondary partition, thereby committing the new firmware to both partitions of the system.

### Operands

none

### Examples

To commit a version of the firmware:

```
switch:admin> firmwarecommit
```

### See also

`altBoot`

`firmwareDownload`

`firmwareShow`

`version`



## firmwareDownload

Downloads MP Router software from an FTP server.

### Synopsis

```
firmwaredownload -b -n hostIpAddr userName pfile password
```

### Availability

admin

### Description

Use this command to download and install the MP Router software from a remote FTP server to the platform's nonvolatile storage banks in a single step.

The new firmware is in the form of RPM packages with names defined in *pfile*, a binary file that contains specific firmware information (time stamp, platform code, version, and so forth) and the names of packages of the firmware to be downloaded. These packages are made available periodically to add features or to remedy defects. Contact customer support to obtain information about available firmware versions.

All systems supported by this firmware have two partitions of nonvolatile storage areas, a primary and a secondary, to store two firmware images. *firmwareDownload* always loads the new image into the secondary partition and swaps the secondary partition to be the primary. When *-b* is specified, the command reboots the system and activates the new image. Finally, it performs the [firmwareCommit](#) procedure automatically, to copy the new image to the other partition, unless *-n* is used.

The command supports both noninteractive and interactive modes. If it is invoked without any command line parameters, or if there is any syntax error in the parameters, the command goes into interactive mode for downloading the main Fabric OS firmware.

The *firmwareDownload* command might fail for any of the following reasons:

- The host is not known to the MP Router.
- The host cannot be reached by the MP Router.
- The FTP user name or password is incorrect.
- *pfile* does not have the correct file permissions.
- *pfile* does not exist on the host.
- *pfile* is not in the correct format.
- The package specified in *pfile* does not exist.
- The FTP server is not running on the host.
- Another *firmwareDownload* session is running.

### Operands

This command has the following required operands:

<i>hostIpAddr</i>	A valid FTP server IP address from which <i>pfile</i> is downloaded, for example, <i>citadel</i> or <i>192.168.166.30</i> . The <i>pfile</i> downloads from this host.
<i>userName</i>	A valid user name for FTP access to the host, for example, <i>jdoe</i> . Uses the user name to access the host.

<i>pfile</i>	A fully qualified path and file name for the firmware package list, for example, <code>/v7.4.0/release.plist</code> . Absolute path names can be specified using forward slashes ( <code>/</code> ).
<i>password</i>	The password for <code>userName</code> .
<code>-b</code>	Activates autoreboot mode. After downloading firmware, the system must be rebooted for the new firmware to become active. When this operand is not specified, you must issue the <code>reboot</code> command to activate the download image. If autoreboot mode is enabled, the system reboots automatically after this firmware download completes successfully.
<code>-n</code>	Deactivates autocommit mode. By default, after running this command and after the reboot (either manual or autoreboot), the switch performs a <code>firmwareCommit</code> command automatically. When autocommit is disabled, you need to issue <code>firmwareCommit</code> to replicate the downloaded image to both partitions of the system.
<code>-i -s -t</code>	Provided for Fabric OS compatibility only.

## Examples

To download and install an XPath base OS package from host 192.168.166.30 using account johndoe, password 12345, and pfile `/usr/tmp2/firmware`:

```
switch:admin> firmwaredownload 192.168.166.30 johndoe /usr/tmp2/firmware 12345
```

## See also

[altBoot](#)  
[firmwareCommit](#)  
[fspfShow](#)  
[version](#)

## firmwareShow

Displays the versions on all firmware partitions in the system.

### Synopsis

firmwareshow

### Availability

admin

### Description

Use this command to display the firmware versions on the primary and secondary partitions.

### Operands

none

### Examples

```
switch:admin> firmwareshow

===== Active (Bank 2) Version
=====

=====
Installed Packages:
=====

Package Name:      xpath_os_v7.4.0_prealpha1_bld17
Install Date:      Apr 14, 2005 18:48

===== Inactive (Bank 1) Version
=====

=====
Installed Packages:
=====

Package Name:      xpath_os_v7.4.0_prealpha1_bld17
Install Date:      Apr 14, 2005 18:48
```

### See also

[altBoot](#)

[firmwareCommit](#)

[firmwareDownload](#)

[version](#)

## fspfShow

Displays FSPF protocol information.

### Synopsis

fspfshow

### Availability

all users

### Description

Use this command to display the Fibre Channel Shortest Path First (FSPF) protocol information and some internal data structures.

The command displays the following fields:

Version	The version of FSPF protocol
Domain ID	The domain number of the local MP Router
ISL_PORT BIT MAP	The bit map of all the E_Ports
minLSArrival	FSPF constant
minLSInterval	FSPF constant
startTime	The start time of FSPF since boot

### Operands

none

### Examples

To display FSPF protocol information:

```
switch:admin> fspfshow
Version = 2
Domain ID =100
isl_ports bitmap [0-15] = 0x7873
minLSArrival = 1
minLSInterval = 5
startTime = Thu Aug 21 10:41:42 2003
```

### See also

[fabricShow](#)

[topologyShow](#)

[urouteShow](#)

## h

Displays the most recent 20 commands executed.

### Synopsis

h

### Availability

all users

### Description

Use this command to display the most recent 20 commands executed.

### Operands

none

### Examples

To display the history of commands executed:

```
switch:admin> h
```

### See also

none

## help

Displays the manual (man) page of a command.

### Synopsis

```
help ["command"]
```

### Availability

all users

### Description

Use this command without a parameter to display an alphabetical list of commands for which help is available. With a parameter, the command displays the man page of the specified command. If no help is available for the command, a message that states there is no help for the command appears.

### Operands

This command has the following optional operand:

<i>"command"</i>	The command for which help is required, with or without quotes.
------------------	---

### Examples

To display the man page of [chassisShow](#):

```
switch:admin> help chassisshow
```

### See also

none

## ifcsDisable

Disables the IP storage fabric configuration server (iFCS) function in the fabric.

### Synopsis

`ifcsdisable`

### Availability

admin

### Description

Use this command to disable the iFCS function in the fabric and place all IP-aware routers currently in primary and secondary mode in stand-alone mode.



**NOTE:** Issue this command from the primary iFCS only.

### Operands

none

### Examples

To disable the iFCS function:

```
switch:admin> ifcsdisable
Starting ifcsdisable
.....
ifcsdisable completed successfully
```

### See also

[ifcsEnable](#)

[ifcsShow](#)

## ifcsEnable

Enables the IP storage fabric configuration server (iFCS) function in the fabric by making the MP Router the primary iFCS MP Router.

### Synopsis

ifcsenable

### Availability

admin

### Description

Use this command to enable the iFCS function by selecting this MP Router to be the primary iFCS and making the remaining IP-aware MP Routers to be secondary. The primary iFCS then performs a two-way merge of its existing configuration with all of the secondary MP Routers in the fabric and continues to do so whenever there is a change in any IP storage configuration.

A secondary MP Router automatically becomes the primary if the current primary is removed from the fabric. When this occurs, the primary selection is based on the second and third least-significant bytes of the MP Router WWN. The secondary MP Router in the fabric with the larger value of those two bytes becomes the primary. For example, a secondary with a WWN of 10:00:00:05:1e:15:84:00 becomes primary over another secondary with a WWN of 10:00:00:05:1e:12:de:00 because 0x1584 is larger than 0x12de.

The iFCS function distributes the IQN-to-WWN mapping of each iSCSI host and their shared Challenge Handshake Authentication Protocol (CHAP) secret configuration to all IP storage-aware routers in the fabric. This distribution enables iSCSI hosts to move from one MP Router to another MP Router within a fabric.

iFCS is disabled by default.

### Operands

none

### Examples

To enable the iFCS function:

```
switch:admin> ifcsenable
Starting ifcsenable
.....
ifcsenable completed successfully
```

### See also

[ifcsDisable](#)

[ifcsShow](#)



## ifcsShow

Displays the status of all IP storage fabric configuration server (iFCS) routers in the fabric.

### Synopsis

```
ifcsshow
```

### Availability

all users

### Description

Use this command to display the current status of all iFCS and IP-aware routers in the fabric.

### Operands

none

### Examples

To display the current status of all iFCS routers in the fabric:

```
switch:admin> ifcsshow
```

WWN	IP Address	Status
10:00:00:05:1e:15:84:00	10.32.154.190	PRIMARY
10:00:00:05:1e:12:de:00	10.32.154.112	SECONDARY
10:00:00:05:1e:13:70:00	10.32.154.18	SECONDARY

### See also

[ifcsDisable](#)

[ifcsEnable](#)

## ifModeShow

Displays the operation mode for a management Ethernet interface.

### Synopsis

```
ifmodeshow [mgmtPortNum]
```

### Availability

all users

### Description

Use this command to display the operation mode for a management Ethernet interface.

### Operands

The following operand is optional:

*mgmtPortNum* Specifies the port number of the management Ethernet interface.

### Examples

To display the operation mode for management Ethernet interface 1:

```
switch:admin> ifmodeshow 1

Management ethernet interface configuration

MGMT 1:      Configuration  Current
Mode         auto         100mfd
MAC Address           00:05:1e:31:25:10
```

To display the operation mode for all management Ethernet interfaces:

```
switch:admin> ifmodeshow

Management ethernet interface configuration

MGMT 1:      Configuration  Current
Mode         auto         100mfd
MAC Address           00:05:1e:31:25:10

MGMT 2:      Configuration  Current
Mode         auto         100mfd
MAC Address           00:05:1e:31:25:11
```

### See also

none

## interfaceShow

Displays FSPF interface information.

### Synopsis

```
interfaceshow [port]
```

### Availability

all users

### Description

Use this command to display all the data structures associated with one or all the FSPF interfaces on the MP Router. An FSPF interface corresponds to an E\_Port.

If no arguments are specified, this command displays the interface information for all E\_Ports.

The following fields appear:

LocalPortId	The local port ID.
defaultCost	The default cost of sending a frame over the ISL connected to this interface. A value of 500 indicates a 2-Gb/s link.
cost	The actual cost of sending a frame over the ISL connected to this interface.
delay	The conventional delay incurred by a frame transmitted on this ISL. It is required by the FSPF protocol, and it is a fixed value.
upCount	The number of times this interface came up, with respect to FSPF.
lastUpTime	The last time this interface came up.
downCount	The number of times this interface went down.
lastDownTime	The last time this interface went down.
state	The current state of this neighbor (adjacent) MP Router or switch. This E_Port is used to route traffic to other MP Routers or switches only if the state is NB_ST_FULL.
lastTransition	The time of the last state transition of the neighbor finite state machine.
nghbId	The domain ID of the neighbor switch.
remPort	The port number on the remote switch connected to this port.
nflags	Internal FSPF flags.
initCount	The number of times this neighbor was initialized without the interface going down.
lastInit	The time of the last neighbor initialization.
inactivity time out value	The inactivity timeout value, in milliseconds. When this timeout expires, the adjacency with the neighbor MP Router or switch is considered broken. When this happens, new paths are computed to all the possible destination MP Routers or switches in the fabric.
hello time out value	The Hello timeout value, in milliseconds. When this timeout expires, a Hello frame is sent to the neighbor MP Router or switch through this port.
rXmit time out value	The retransmission timeout value, in milliseconds, which is used to reliably transmit topology information to the neighbor MP Router or switch. If the topology information is not received within the specified time, a frame is retransmitted.

No. of commands accepted	The total number of commands accepted from the neighbor MP Router or switch. It includes Hellos, Link State Updates (LSUs), and Link State Acknowledgements (LSAs).
No. of invalid cmds received	The number of invalid commands received from the neighbor MP Router or switch. Typically, these are commands with an FSPF version number later than the one running on the local MP Router or switch.
No. of hello received	The number of Hello frames received from the neighbor MP Router or switch.
No. of LSUs received	The number of LSUs received from the neighbor MP Router or switch.
No. of LSAs received	The number of LSAs received from the neighbor MP Router or switch.
No. of Hellos xmit attempted	The number of attempted transmissions of Hello frames to the neighbor MP Router or switch.
No. of Hellos transmitted	The number of Hello frames transmitted to the neighbor MP Router or switch.
No. of LSUs transmit attempted	The number of attempted transmissions of LSUs to the neighbor MP Router or switch.
No. of LSUs transmitted	The number of LSUs transmitted to the neighbor MP Router or switch.
No. of LSAs transmit attempted	The number of attempted transmissions of LSAs to the neighbor MP Router or switch.
No. of LSAs transmitted	The number of LSAs transmitted to the neighbor MP Router or switch.

## Operands

The following operand is optional:

*port* Specifies the port number.

## Examples

To display FSPF interface information for port 1:

```
switch:admin> interfaceshow 1

Interface 1 data structure:

LocalPortId           = 1
defaultCost            = 500
cost                  = 500
delay                 = 1
upCount               = 1
lastUpTime            = Tue Jul  6 17:28:51 UTC 2004
downCount             = 0
lastDownTime          = 0
```

(continued on next page)

Neighbor 1 data structure:

state	= NB_ST_FULL
lastTransition	= Tue Jul 6 17:28:51 UTC 2004
nghbId	= 1
remPort	= 1
nflags	= 3
initCount	= 1
lastInit	= Tue Jul 6 17:28:51 UTC 2004
inactivity time out value	= 80
hello time out value	= 20
rXmit time out value	= 5
No. of commands accepted	= 268
No. of invalid cmds received	= 0
No. of hello received	= 258
No. of LSUs received	= 5
No. of LSAs received	= 5
No. of Hellos xmit attempted	= 258
No. of Hellos transmitted	= 258
No. of LSUs transmit attempted	= 4
No. of LSUs transmitted	= 4
No. of LSAs transmit attempted	= 5
No. of LSAs transmitted	= 5

## See also

[linkCost](#)

[nbrStateShow](#)

[portShow](#)

[switchShow](#)

## iodReset

Turns off the in-order delivery option.

### Synopsis

iodreset

### Availability

admin

### Description

Use this command to allow out-of-order delivery of frames during fabric topology changes.

This is the default behavior, because it allows fast rerouting after a fabric topology change.

### Operands

none

### Examples

To turn off the in-order delivery option:

```
switch:admin> iodreset  
in-order delivery option cleared.
```

### See also

[dlsReset](#)

[dlsSet](#)

[dlsShow](#)

[iodReset](#)

[iodSet](#)

[iodShow](#)

[trunkReset](#)

[trunkSet](#)

[trunkShow](#)

## iodSet

Turns on the in-order delivery option.

### Synopsis

iodset

### Availability

admin

### Description

Use this command to enforce in-order delivery of frames during fabric topology changes.

In a stable fabric, frames are always delivered in order, even when the traffic between MP Routers is shared among multiple paths. However, when a topology change occurs in the fabric (for instance, a link goes down), traffic is rerouted around the failure. In general, it is possible that a frame, queued behind a congested link, will be delivered after a frame that was transmitted later but is now taking the new path.

This command ensures that frames are delivered in order, even during fabric topology changes.

The default behavior is for the in-order delivery option to be off.

This command should be used with care, because it causes a delay in the establishment of a new path when a topology change occurs. This command should be used only if there are devices connected to the fabric that do not tolerate occasional out-of-order delivery of frames.

### Operands

none

### Examples

To turn on the in-order delivery option:

```
switch:admin> iodset
in-order delivery option set.
```

### See also

[dlsReset](#)

[dlsSet](#)

[dlsShow](#)

[iodReset](#)

[iodShow](#)

[trunkReset](#)

[trunkSet](#)

[trunkShow](#)

## iodShow

Displays the state of the in-order delivery option.

### Synopsis

`iodshow`

### Availability

all users

### Description

Use this command to determine whether in-order delivery during topology changes is on or off.

### Operands

none

### Examples

To display the state of the in-order delivery option:

```
switch:admin> iodshow  
IOD is not set
```

### See also

[iodReset](#)

[iodSet](#)



## ipaddrSet

Sets the IP configuration for an Ethernet management interface.

### Synopsis

```
ipaddrset mgmtPortNum -i ipAddress -n netMask -g gateway  
-a action [-s] [-r]
```

### Availability

admin

### Description

Use this command to set the IP configuration for an Ethernet management interface.

### Operands

The following operands are required:

<i>mgmtPortNum</i>	Selects one of the two management Ethernet interfaces available on the front panel.
-i <i>ipAddress</i>	Specifies an Ethernet management port number of 1 or 2.
-n <i>netMask</i>	Sets the netmask, in the standard aa.bb.cc.dd format.
-g <i>gateway</i>	Sets the gateway, in the standard aa.bb.cc.dd format.
-a <i>action</i>	Specifies whether the change takes effect immediately ( <i>cfgnow</i> ) or after the next reboot ( <i>cfgafterreboot</i> ).

The following operands are optional:

-s	Specifies whether to set the MP Router virtual IP address and netmask to the same as the new IP address and netmask.
-r	Specifies whether to reset the IP configuration of the management interface. The <i>-r</i> operand is applicable to management interface 2 only.



**NOTE:** If the secondary management interface is not used, the virtual management IP configuration changes along with the primary IP configuration.

### Examples

To set IP address 192.168.10.1, netmask 255.255.255.0, and gateway 192.168.10.2 of management interface 1:

```
switch:admin> ipaddrset 1 -i 192.168.10.1 -n 255.255.255.0 -g 192.168.10.2 -a cfgnow
```

To set the IP address 192.168.10.1, netmask 255.255.255.0, and gateway 192.168.10.2 of management interface 1, and set the MP Router virtual IP address and netmask:

```
switch:admin> ipaddrset 1 -i 192.168.10.1 -n 255.255.255.0 -g 192.168.10.2 -a cfgnow -s
```

To reset IP configuration of management interface 2 to factory defaults:

```
switch:admin> ipaddrset 2 -r -a cfgafterreboot
```

## See also

[ipaddrShow](#)

[svipAddrSet](#)

[svipAddrShow](#)

## ipaddrShow

Displays the Ethernet management interface IP configuration.

### Synopsis

```
ipaddrshow [mgmtPortNum]
```

### Availability

all users

### Description

Use this command to display the IP configuration for one or all Ethernet management interfaces.

### Operands

The following operand is optional:

*mgmtPortNum* Specifies the management Ethernet port number.

### Examples

To display the IP configuration of Ethernet management interface 1:

```
switch:admin> ipaddrshow 1
```

MGMT 1	Configuration	Current
IP Address	10.33.58.20	10.33.58.20
Net Mask	255.255.224.0	255.255.224.0
Gateway	10.33.48.1	10.33.48.1

To display the IP configuration of all Ethernet interfaces:

```
switch:admin> ipaddrshow
```

MGMT 1	Configuration	Current
IP Address	10.33.58.20	10.33.58.20
Net Mask	255.255.224.0	255.255.224.0
Gateway	10.33.48.1	10.33.48.1

MGMT 2	Configuration	Current
IP Address	0.0.0.0	0.0.0.0
Net Mask	0.0.0.0	0.0.0.0
Gateway	0.0.0.0	0.0.0.0

### See also

[ipaddrSet](#)

## iscsiAuthCfg

Displays and configures the iSCSI authentication database.

### Synopsis

```
iscsiauthcfg [-i iSCSI_IQN -c iSCSI_CHAP_Secret] [-d iSCSI_IQN  
[-c iSCSI_CHAP_Secret]]
```

### Availability

admin

### Description

Use this command to display and configure the iSCSI authentication database. To display the database, execute `iscsiAuthCfg` without operands. If the same iSCSI qualified name (IQN) maps to two different CHAP secrets, the status of the entry is displayed as `Conflict`. Use `-d` to delete the CHAP secret from a known IQN. Use `-i` and `-c` to set a CHAP secret for a known IQN.

Use the [ifcsShow](#) command to query the iFCS status.

### Operands

The following operands are optional:

- |                                     |   |
|-------------------------------------|---|
| <code>-i</code> and <code>-c</code> | Sets a CHAP secret for an IQN.  |
| <code>-d</code>                     | Deletes the CHAP secret from an IQN. This operand can be used only on the IP storage fabric configuration server (iFCS) primary MP Router if iFCS is enabled. |

### Examples

To add a CHAP secret for an IQN (`iqn.1991-05.com.microsoft:cp082207`):

```
switch:admin> iscsiauthcfg -i iqn.1991-05.com.microsoft:cp082207 -c abcdefg123  
Create [iqn.1991-05.com.microsoft:cp082207, abcdefg123] successful.
```

To display CHAP secrets:

```
switch:admin> iscsiauthcfg  
Index      iSCSI Name                                iSCSI CHAP      Status  
1          iqn.1991-05.com.microsoft:cp082207      *****        Normal
```

To delete a CHAP secret for an IQN (`iqn.1991-05.com.microsoft:cp082207`):

```
switch:admin> iscsiauthcfg -d iqn.1991-05.com.microsoft:cp082207  
Delete [iqn.1991-05.com.microsoft:cp082207] successful.
```

### See also

[ifcsShow](#)

`iscsiWwnAlloc`

## iscsiFailoverAdd

Adds a failover world wide name (WWN) for the local MP Router.

### Synopsis

```
iscsifailoveradd failover-switch-wwn
```

### Availability

admin

### Description

Use this command to add a failover MP Router. The IP storage fabric configuration server (iFCS) function must be enabled so that the high availability (HA) function works appropriately.

### Operands

The following operand is required:

*failover-switch-wwn*      Specifies the WWN of the failover MP Router.

### Examples

To add a failover MP Router whose WWN is 10:00:00:05:1e:13:36:00:

```
switch:admin> iscsifailoveradd 10:00:00:05:1e:13:36:00
The failover switch is added
```

### See also

[ifcsDisable](#)

[ifcsEnable](#)

[ifcsShow](#)

[iscsiFailoverDelete](#)

[iscsiShow](#)

## iscsiFailoverDelete

Deletes a previously configured failover MP Router.

### Synopsis

```
iscsifailoverdelete
```

### Availability

admin

### Description

Use this command to remove a previously configured failover MP Router.

### Operands

none

### Examples

To remove a previously configured failover MP Router:

```
switch:admin> iscsifailoverdelete
The failover switch is deleted
```

### See also

[iscsiFailoverAdd](#)

[iscsiShow](#)

## iscsiPortShow

Displays iSCSI sessions and port counters on the specified portal.

### Synopsis

```
iscsiportshow port [-r]
```

### Availability

all users

### Description

Use this command to display all the iSCSI sessions in the system and the counters of an iSCSI port.

### Operands

This command has the following operands:

<i>port</i>	Identifies the port. (required)
<i>-r</i>	Resets the counter. (optional)

### Examples

To display information about iSCSI port 12:

```
switch:admin> iscsiportshow 12

Total # active iSCSI session: 1

Session # 1:
  Session ID      : 0x40 00 01 37 00 9b
  Initiator       : iqn.1991-05.com.microsoft:isi154110 at 192.168.250.110
  Initiator DAP   : 0x640700
  Target          : iqn.2002-12.com.brocade:21000004cf20ab8a
  Target DAP      : 0x6408ce
  TSID            : 0x705

Port statistics:
  iSCSI In PDU    : 20
  iSCSI In Octet  : 976
  iSCSI Out PDU   : 37
  iSCSI Out Octet : 63967
  FC In PDU       : 35
  FC In Octet     : 4008
  FC Out PDU      : 18
  FC Out Octet    : 0
  iSCSI Cmd       : 18
```

(continued on next page)

```
iSCSI Data Out   : 0
iSCSI Data In    : 17
FC R2T           : 0
FC RSP           : 18
iSCSI Error PDU  : 0
FC Error PDU     : 0
iSCSI SNACK      : 0
iSCSI NOP OUT    : 0
iSCSI Text       : 1
iSCSI Logout     : 1
iSCSI Abort Tsk  : 0
iSCSI Task Mgmt  : 0
```

### See also

[portCfgGige](#)

[portShow](#)



## iscsiShow

Displays an overview of the iSCSI status on the MP Router.

### Synopsis

`iscsishow`

### Availability

all users

### Description

Use this command to display an overview of the iSCSI status on the MP Router. The display includes the number of each of the following:

- MP Router portals that are currently iSCSI portals
- iSCSI sessions across all those portals
- iSCSI initiators currently in session with the FC storage
- FC targets that are currently used by all the initiators across all the portals

Also, it provides a count of errors and other HA configuration parameters. The HA MP Router is indicated if it is in fabric.

### Operands

none

### Examples

To display information about iSCSI status on the MP Router:

```
switch:admin> iscsishow

IFCS Status: PRIMARY
IP Address of Primary: 10.32.154.18
WWN of HA Switch: 10:00:00:05:1e:15:a9:00
(in the fabric)
Number of iSCSI Portals: 1
Number of iSCSI Target Nodes: 5
Number of iSCSI Initiator Nodes: 20
Number of iSCSI Login Failures: 2
Number of iSCSI Authentication Failures: 7
Number of iSCSI Session Aborts: 1
```

### See also

`iscsiPortShow`

[portShow](#)

## iscsiWwnAlloc

Displays and configures the IQN-to-WWN mapping database.

### Synopsis

```
iscsiwwnalloc [-i iSCSI_IQN [-n node_WWN -p port_WWN ]  
[-d iSCSI_IQN [-n node_WWN ] ] [-v]
```

### Availability

admin

### Description

Use this command to display and configure the IQN-to-WWN mapping database. To display the database, execute `iscsiWwnAlloc` without operands. If the same IQN maps to two different node WWNs, the status of the entry is displayed as `Conflict`. If the same initiator has both IQN and IP addresses mapping to two different node WWNs, the entry status displays as `Multiple`.

Attempts to delete a mapping fail if the iSCSI initiator is currently registered with the Name Server. Use `-f` to delete the mapping entry irrespective of the initiator's Name Server registration status.

In an iFCS function-enabled fabric, only the primary FCS allows for manual WWN allocation and deletion. The command fails if there are connectivity problems between the primary and secondary FCS and if the WWN entry is associated with zoning. You must fix the connectivity problems and clean up the zoning configuration before deleting a WWN entry.

### Operands

This command has the following operands:

<code>-i</code>	Preallocates a node and a port WWN for a given IQN. Both node and port WWNs are generated dynamically.
<code>-n</code>	Specifies a specific node WWN.
<code>-p</code>	Specifies a specific port WWN.
<code>-d</code>	Removes an IQN-to-WWN mapping entry.
<code>-n</code>	Specifies a specific node if there are conflicts in the WWN mapping table.
<code>-f</code>	Deletes the mapping entry irrespective of the initiator's Name Server registration status.
<code>-v</code>	Displays zoning entries associated with the IQN.

### Examples

To add node and port WWNs for a given IQN (iqn.1991-05.com.microsoft:cp082207):

```
switch:admin> iscsiwwnalloc -i iqn.1991-05.com.microsoft:cp082207  
Create iqn.1991-05.com.microsoft:cp082207 successful.
```

To display the IQN-to-WWN mapping database:

```
switch:admin> iscsiwwnalloc

1      IQN:      iqn.1991-05.com.microsoft:cp082207
      Node WWN: 56:00:51:e1:33:60:00:02
      Port WWN: 57:00:51:e1:33:60:00:02
      Status: Normal

switch:admin> iscsiwwnalloc -v

1      IQN:      iqn.1991-05.com.microsoft:cp082207
      Node WWN: 56:00:51:e1:33:60:00:02
      Port WWN: 57:00:51:e1:33:60:00:02
      Status: Normal (no zone configuration)
```

To delete the iqn.1991-05.com.microsoft:cp082207 entry:

```
switch:admin> iscsiwwnalloc -d iqn.1991-05.com.microsoft:cp082207
Delete iqn.1991-05.com.microsoft:cp082207 successful.
```

## See also

[iscsiAuthCfg](#)

## licenseAdd

Adds a license key to the system.

### Synopsis

```
licenseadd "licensekey"
```

### Availability

admin

### Description

Some features of the system and of the fabric to which it is connected are optional, licensed products. Without a license installed, the services will not function.

Use this command to add a license to the system. A license key is a string of approximately 16 uppercase and lowercase letters and digits. Case is significant. The key is an encrypted form of the system WWN and the products licensed to run on this system.

The license key must be entered into the system exactly as issued. If entered incorrectly, the license key might be accepted, but licensed products will not function. After entering the license key, use the [licenseShow](#) command to check for correct function. If no licensed products are displayed, the license key is invalid.

After entering a valid license key, the licensed product is available immediately; you do not need to reboot the system.

### Operands

The following operand is required:

"licensekey"                      Specify the license key, with or without quotation marks.

### Examples

To add a license to the system:

```
switch:admin> licenseadd "bQebzbRdScRfc0iK"  
License key bQebzbRdScRfc0iK added
```

### See also

[licenseRemove](#)

[licenseShow](#)

## licenseRemove

Removes a license from this system.

### Synopsis

```
licenseremove "licensekey"
```

### Availability

admin

### Description

Some features of the system and of the fabric to which it is connected are optional, licensed products. Without a license, the services will not function.

Use this command to remove an existing license key from the system. The existing license key must be entered as an operand exactly as shown by [licenseShow](#), including case.

### Operands

The following operand is required:

*"licensekey"*                      Specify the license key, in quotation marks.

### Examples

To remove a license from the system:

```
switch:admin> licenseremove "bQebzbRdScRfc0iK"  
removing license key "bQebzbRdScRfc0iK"
```

### See also

[licenseAdd](#)

[licenseShow](#)

## licenseShow

Displays installed licenses.

### Synopsis

licenseshow

### Availability

all users

### Description

Some features of the system and of the fabric to which it is connected are optional, licensed products. Without a license, the products will not function.

Use this command to display the current, installed licenses and a list of the licensed products that are enabled by these license keys.

A license key is a string of approximately 16 uppercase and lowercase letters and digits. Case is significant. The key is an encrypted form of the system WWN and the products licensed to run on this system.

### Operands

none

### Examples

To display the current licenses:

```
switch:admin> licenseshow
License Key: yzSyyeQySz0TzzF
              Web

License Key: R9SbzQyczcSATc0u
              Zoning

License Key: SzcS9yReyyT0dTAM
              Base switch license

License Key: ReyQSc9czafzRT1
              Trunking

License Key: ReyQSc9czSnzRT1
              FCIP

License Key: ReyQSc9czSf1RTv
              Fibre Channel Routing Services

License Key: ReyQSc9czSvzRT9
              Ports on Demand - enable all 16 ports
```

**See also**[licenseAdd](#)[licenseRemove](#)

## linkCost

Displays or sets the configured port link cost.

### Synopsis

```
linkcost port [linkcost]
```

### Availability

admin

### Description

Use this command to display or set the cost of an interswitch link (ISL). The cost of a link is a dimensionless positive number. It is used by the FSPF path selection protocol to determine the least-costly path for a frame from the source to the destination MP Router or switch. The cost of a path is the sum of the costs of all the ISLs traversed by that path, also known as the *metric*.

FSPF supports load sharing over a number of equal-cost paths.

Every ISL has a default cost that is inversely proportional to the bandwidth of the Gb/s ISL. For a 1-Gb/s ISL, the link cost is 1,000; for a 2-Gb/s ISL, the link cost is 500.

### Operands

Without operands, this command displays the actual link cost of all the links. All currently active ISLs have an additional suffix of `E_Port` attached to their interface numbers. If the link has a static cost assigned to it, the link cost for that link has a suffix of `STATIC`.

With one operand (`port`), this command displays the actual cost of a specific link. With the two operands (`port` and `linkcost`), it sets the cost of a specific link. Setting the cost to 0 removes a static cost from the database and reverts to the current operational port link cost.

### Examples

To display the fixed link cost of port 3:

```
switch:admin> linkcost 3
port 3 linkcost is: 1000 (STATIC)
```

To set the link cost of port 5 to the default:

```
switch:admin> linkcost 5 0
port 1 linkcost is set to: AUTO
```



To display the link cost of all ports:

```
switch:admin> linkcost
```

Interface	Cost
0	500
1	2000 (STATIC)
2	500
3	500
4 (VE_PORT)	4000
5	500
6 (ISCSI)	N/A
7	500
8	500
9	500
10	500
11 (VE_PORT)	1800 (STATIC)
12	500
13	500
14	500
15	500

To set the link cost of port 1 to 1000:

```
switch:admin> linkcost 1 1000
port 1 linkcost is set to: 1000
```

To set the link cost of ports 6 through 8 to 2000:

```
switch:admin> linkcost 6-8 2000
port 6 linkcost is set to: 2000
port 7 linkcost is set to: 2000
port 8 linkcost is set to: 2000
```

## See also

[portCfgTopology](#)

[portDisable](#)

[portEnable](#)

[portShow](#)

[portType](#)

## IsanZoneShow

Displays LSAN zone information.

### Synopsis

```
lsanzoneshow [-s ] [-f fabricID] [-w wwn] [-z zonename]
```

### Availability

all users

### Description

This command displays the LSAN zones. The LSAN zones are normal WWN zones created in MP Router EX\_Port-connected edge fabrics. The LSAN zones are identified by the case-insensitive text string "LSAN\_" in the zone name and contain only port WWNs. The MP Router uses these zones to establish the interfabric device sharing policy. The LSAN zones are established by zoning administration in each EX\_Port-attached edge fabric. Interfabric device sharing is allowed between two or more devices if the LSAN zones defined in their respective edge fabrics both allow the two devices to communicate (such that the intersection of LSAN zones in two edge fabrics define the interfabric device sharing policy).

The LSAN zones are listed by fabric. LSAN zone membership information (information about the devices in the LSAN zone) is provided for each LSAN zone. The default output displays only port world wide names of the LSAN zone members.

The message `No LSAN zone found` is displayed if there is no LSAN zone information available at this MP Router.

Each LSAN zone entry displays the following output:

Fabric ID	The fabric on which the LSAN zone has been created.
Zone Name	The zone name.
A list of zone members	The zone members or devices. The default output displays the WWN of the zone members.

### Operands

This command has the following optional operands:

<code>-s</code>	Displays state information for the device. Valid states include:	
	Exist	Device exists in this fabric (the fabric of the LSAN zone entry).
	Imported	Device has been imported (proxy created) into this fabric.
	Configured	Device is configured to be in an LSAN, but the device is not imported and does not exist in this fabric.
<code>-f <i>fabricID</i></code>	Specifies a search parameter that returns LSAN zones for the specified fabric.	
<code>-w <i>wwn</i></code>	Specifies a search parameter that displays LSAN zones containing the specified port WWN.	
<code>-z <i>zonename</i></code>	Specifies a search parameter that displays LSAN zones with the specified zone name.	

## Examples

To display the LSAN zones:

```
switch:admin> lsanzoneshow
Fabric ID: 4 Zone Name: lsan_fcr10_0
    50:05:07:65:05:84:0b:83
    50:05:07:65:05:84:09:0e
    10:00:00:00:c9:2b:6a:68
    21:00:00:20:37:18:22:55
Fabric ID: 5 Zone Name: lsan_fcr11_0
    10:00:00:00:c9:2b:6a:68
    21:00:00:20:37:18:22:55
    50:05:07:65:05:84:0b:83
    50:05:07:65:05:84:09:0e
```

## See also

[fcrFabricShow](#)

[fcrPhyDevShow](#)

[fcrProxyDevShow](#)

[fcrRouteShow](#)

[switchShow](#)

## IsdbShow

Displays the FSPF Link State Database.

### Synopsis

```
lsdbshow [domain_number]
```

### Availability

all users

### Description

Use this command to display a Link State Database Record for either one or all the MP Routers or switches in the fabric.

The MP Router connects to the fabric when two data structures are involved: the Link State Database Entry and a Link State Record (LSR). The LSR for domain *n* describes all the links that the MP Router with domain number *n* has with all its neighbor routers or switches. For a link to be reported in the LSR, the neighbor for that link must be the NB\_ST\_FULL state.

This command displays the content of both data structures, if the LSR is present, as follows:

Domain	The domain number described by this LSR.
Timers Running	Number of timers running.
flags	Internal variable.
numLSAsPending	Number of link state acknowledgements pending.
floodlist	The ports on which the LSAs are expected.
Link Record type	Switch Link Record or AR Summary Record type.
Age of this record in seconds	The age, in seconds, of this LSR. An LSR is removed from the database when its age exceeds 3,600 seconds.
Domain id of switch owning this record	
Domain id of the switch advertising the LSR	
LSIncarnationNum	The incarnation number of this LSR.
checksum	The checksum of the whole LSR, except the lsAge field.
LSRLength	The total length (in bytes) of this LSR. The length includes the header and the link state information for all the links.
Num Links	The number of links to the domain.
LinkId	The ID of this link. The ID is the domain number of the MP Router or switch on the other side of the link.
out port	The port number on the local MP Router.
rem port	The port number of the port on the other side of the link.
cost	The actual cost of this link.

### Operands

The following operand is optional:

<i>domain_number</i>	The domain number of the LSR to display.
----------------------	--

## Examples

To display the LSR owned by domain 58:

[illegible]

## See also

fabricShow

```
interface Show
```

nbrStateShow

topologyShow

## nbrStateShow

Displays the FSPF state of the neighbor.

### Synopsis

```
nbrstateshow [port]
```

### Availability

all users

### Description

Use this command to display a synopsis of all the neighbors of the local MP Router or of a specific neighbor if a parameter is supplied.

A neighbor is a switch or another MP Router that is attached directly to the local MP Router.

The following fields are displayed:

Local Domain Id	The domain number of the local MP Router.
Local Port	The E_Port (interface) on the local MP Router.
Domain	The domain number of the remote MP Router or switch.
Remote Port	The E_Port (interface) on the remote MP Router or switch.
state	The state of the neighbor. The E_Port is used to route frames only if the neighbor is in NB_ST_FULL state.

Other possible neighbor states are:

NB_ST_DOWN	Neighbor state machine is down.
NB_ST_INIT	In Init state. Waiting for two-way hello from the neighbor.
NB_ST_DB_XCHG	In Database Exchange state. Link state record database exchange in progress.
NB_ST_DB_ACK_WAIT	In Database Acknowledge wait state. Waiting for an acknowledgement for the link state record database that was sent from the local MP Router. The neighbor's database was received already.
NB_ST_DB_WAIT	In Database Wait state. Local link state database was acknowledged by the neighbor. Waiting for the database from the neighbor.

### Operands

This command has the following optional operand:

<i>port</i>	The port on the local MP Router that connects to the neighbor whose FSPF state is to be displayed.
-------------	--

### Examples

To display the neighbor state of all E\_Ports:

```
switch:admin> nbrstateshow
Local Domain Id: 100
Local-Port      Domain      Remote-Port      state
3               1          14              NB_ST_FULL
4               1          13              NB_ST_FULL
10              1          12              NB_ST_FULL
15              4          4               NB_ST_FULL
```

To display the neighbor state of port 3:

```
switch:admin> nbrstateshow 3
Local Domain Id: 100
Local-Port   Domain   Remote-Port   state
3           1         14           NB_ST_FULL
```

## See also

[fabricShow](#)

[interfaceShow](#)

[switchShow](#)

## nbrStatsClear

Resets FSPF interface counters.

### Synopsis

```
nbrstatsclear [port-num]
```

### Availability

admin

### Description

Use this command to reset the counters of all the different FSPF frames transmitted and received on an interface on the MP Router.

Without parameters, this command resets the counters on all the interfaces.

### Operands

The following operand is optional:

*port-num*                      The port number of the interface whose counters are to be reset.

### Examples

To clear the neighbor counter on all E\_Ports:

```
switch:admin> nbrstatsclear  
NBR Stats Cleared
```

To clear the neighbor counter on port 3:

```
switch:admin> nbrstatsclear 3  
NBR Stats Cleared
```

### See also

[interfaceShow](#)

[nbrStateShow](#)

[switchShow](#)



## nsAllShow

Displays global Name Server information.

### Synopsis

```
nsallshow [-v]
```

### Availability

all users

### Description

Use this command to display the 24-bit Fibre Channel addresses of all devices for all routers or switches in the fabric.

### Operands

The following operand is optional:

-v                      Verbose mode displays additional information, such as class of service, device port World Wide Name (WWN), and device node WWN.

### Examples

To display all the devices in the fabric:

```
switch:admin> nsallshow
0d02cd 0d02ce 0d02d1 0d02d2 0d02d3 0d02d4 0d02d5 0d02dc
0d02e0 0d02e1 0d02e2 0d0600 0df000 0df001 0df002 0df003
0df004 0df005 0df006 0df007 0df008 0df009 0df00a 0df00b
0df00c 0df00d 0df00e 0df00f
28 Nx_Port devices present in the fabric
```

To display information in verbose mode (-v):

```
switch:admin> nsallshow -v
```

Type	Pid	COS	Port WWN	Node WWN
NL	0d02cd	3	22:00:00:04:cf:20:54:ad	20:00:00:04:cf:20:54:ad
NL	0d02ce	3	22:00:00:04:cf:27:12:29	20:00:00:04:cf:27:12:29
NL	0d02d1	3	22:00:00:04:cf:22:ea:1d	20:00:00:04:cf:22:ea:1d
NL	0d02d2	3	22:00:00:04:cf:22:ea:10	20:00:00:04:cf:22:ea:10
NL	0d02d3	3	22:00:00:04:cf:22:ec:cb	20:00:00:04:cf:22:ec:cb
NL	0d02d4	3	22:00:00:04:cf:22:ef:b9	20:00:00:04:cf:22:ef:b9
NL	0d02d5	3	22:00:00:04:cf:27:10:d0	20:00:00:04:cf:27:10:d0
NL	0d02dc	3	22:00:00:04:cf:1b:ce:c3	20:00:00:04:cf:1b:ce:c3
NL	0d02e0	3	22:00:00:04:cf:1b:c1:3e	20:00:00:04:cf:1b:c1:3e
NL	0d02e1	3	22:00:00:04:cf:1b:c5:52	20:00:00:04:cf:1b:c5:52
NL	0d02e2	3	22:00:00:04:cf:1b:c5:38	20:00:00:04:cf:1b:c5:38
N	0d0600	3	21:00:00:e0:8b:08:f7:81	20:00:00:e0:8b:08:f7:81
N	0df000	3	50:00:51:e1:32:60:01:00	50:00:51:e1:32:60:00:00
N	0df001	3	50:00:51:e1:32:60:01:01	50:00:51:e1:32:60:00:00
N	0df002	3	50:00:51:e1:32:60:01:02	50:00:51:e1:32:60:00:00
N	0df003	3	50:00:51:e1:32:60:01:03	50:00:51:e1:32:60:00:00
N	0df004	3	50:00:51:e1:32:60:01:04	50:00:51:e1:32:60:00:00
N	0df005	3	50:00:51:e1:32:60:01:05	50:00:51:e1:32:60:00:00
N	0df006	3	50:00:51:e1:32:60:01:06	50:00:51:e1:32:60:00:00
N	0df007	3	50:00:51:e1:32:60:01:07	50:00:51:e1:32:60:00:00
N	0df008	3	50:00:51:e1:32:60:01:08	50:00:51:e1:32:60:00:00
N	0df009	3	50:00:51:e1:32:60:01:09	50:00:51:e1:32:60:00:00
N	0df00a	3	50:00:51:e1:32:60:01:0a	50:00:51:e1:32:60:00:00
N	0df00b	3	50:00:51:e1:32:60:01:0b	50:00:51:e1:32:60:00:00
N	0df00c	3	50:00:51:e1:32:60:01:0c	50:00:51:e1:32:60:00:00
N	0df00d	3	50:00:51:e1:32:60:01:0d	50:00:51:e1:32:60:00:00
N	0df00e	3	50:00:51:e1:32:60:01:0e	50:00:51:e1:32:60:00:00
N	0df00f	3	50:00:51:e1:32:60:01:0f	50:00:51:e1:32:60:00:00

28 Nx\_Port devices present in the fabric

## See also

[nsShow](#)

[switchShow](#)

## nsShow

Displays local Name Server information.

### Synopsis

nsshow

### Availability

all users

### Description

Use this command to display local Name Server information and information about devices connected to this MP Router. The [nsAllShow](#) command displays information from all MP Routers or switches.

The message `No entries in name server` is displayed if there is no information for this MP Router; however, there still might be devices connected to other MP Routers or switches in the fabric. Each line of output displays the following information:

Type	U	Unknown type of device.
	N	N_Port type of device.
	NL	NL_Port type of device.
Pid	The 24-bit Fibre Channel address.	
COS	A list of classes of service supported by the device.	
PortName	The world wide name of the device port.	
NodeName	The world wide name of the device node. There might be additional lines if the device has registered any of the following information (the MP Router automatically registers SCSI inquiry data for Fibre Channel Protocol [FCP] target devices): FC4s supported, port and node symbolic names, fabric port name, and hard address.	

### Operands

none

### Examples

To display all the local devices attached to the MP Router:

```
switch:admin> nsshow
{
  Type Pid    COS    PortName                               NodeName
  NL   020d2c;  3;21:00:00:04:cf:20:a4:04;20:00:00:04:cf:20:a4:04
      FC4s: FCP [SEAGATE ST336605FC      0002]
      Fabric Port Name: 20:0d:00:05:1e:12:ca:00
  NL   020d2d;  3;21:00:00:04:cf:27:21:3f;20:00:00:04:cf:27:21:3f
      FC4s: FCP [SEAGATE ST336605FC      0002]
      Fabric Port Name: 20:0d:00:05:1e:12:ca:00
```

(continued on next page)

```
NL    020d2e;          3;21:00:00:04:cf:20:60:aa;20:00:00:04:cf:20:60:aa
FC4s: FCP [SEAGATE ST336605FC      0002]
Fabric Port Name: 20:0d:00:05:1e:12:ca:00
NL    020d31;          3;21:00:00:04:cf:20:65:cb;20:00:00:04:cf:20:65:cb
FC4s: FCP [SEAGATE ST336605FC      0002]
Fabric Port Name: 20:0d:00:05:1e:12:ca:00
The Local Name Server has 4 entries }
```

## See also

[nsAllShow](#)

[switchShow](#)

## passwd

Changes a user's password.

### Synopsis

```
passwd [-u userName]
```

### Availability

all users

### Description

Use this command to change a password.

When changing a password, you are prompted to enter the old password and the new password, and then you are prompted to confirm the new password.

An admin user can reset other users' passwords to the default password—`password`—by using the `-u` operand.

The maximum length of a password is eight characters.

### Operands

The following operand is optional:

`-u userName`

Specifies a user name; available only for an admin user.

### Examples

To change `admin123`'s password after logging in as `admin123`:

```
switch:admin> passwd
Old password:
New password:
Retyped new password:
The password is changed.
```

To reset `user123`'s password after logging in as `admin`:

```
switch:admin> passwd -u user123
The password is changed.
```

### See also

[userAdd](#)

[userDel](#)

[userShow](#)

## pdShow

Displays data from a panic dump file.

### Synopsis

pdshow

### Availability

admin

### Description

Use this command to display data from a panic dump file. The panic dump file contains information that might be useful to determine the cause of a system panic.

### Operands

none

### Examples

To display the panic dump file of the MP Router:

```
switch:admin> pdshow
```

### See also

[diagUpload](#)

## ping

Sends Internet Control Message Protocol (ICMP) ECHO\_REQUEST packets to network hosts.

### Synopsis

```
ping [-adfnogrvDPQRL] [-c count] [-E policy] [-g gateway] [-i interval]  
[-I ifaddr] [-l preload] [-p pattern] [-s packetsize] [-t tos] [-T ttl]  
[-w maxwait] host
```

### Description

Use this command to apply the two IP management ports in the system. For ping functionality on individual ports that are configured for IP instead of Fibre Channel, see the [rnPing](#) command.

This command uses the ICMP protocol's mandatory ECHO\_REQUEST datagram to elicit an ICMP ECHO\_RESPONSE from a host or gateway. ECHO\_REQUEST datagrams (pings) have an IP and ICMP header, followed by a *structtimeval* and then an arbitrary number of *pad* bytes used to fill out the packet.

### Operands

This command has the following optional operands:

- a                   Emits an audible beep (by sending an ASCII BEL character to the standard error output) after each unique response is received. This is disabled for flood pings, as it might cause temporary delays.
- c                   Stops after sending (and waiting the specified delay to receive) *count* ECHO\_RESPONSE packets.
- d                   Sets the SO\_DEBUG option on the socket being used.
- D                   Sets the DoNotFragmentbit option in the IP header. This can be used to determine the path MTU.
- E                   Uses IPsec policy specification string *policy* for packets. For the format of the specification string, see `ipsec_set_policy` 3. Note that this option is the same as -P in KAME/FreeBSD and KAME/BSDI. -P was already occupied in NetBSD.
- f                   Floods ping. Outputs packets either as fast as they come back or 100 times per second, whichever is faster. For every ECHO\_REQUEST sent, a period (.) is printed, while for every ECHO\_REPLY received, a backspace is printed. This option provides a rapid display of how many packets are being dropped. Only the superuser can use this option.

---

**NOTE:** This option can be very hard on a network and should be used with caution.

---

- g                   Uses Loose Source Routing to send the ECHO\_REQUEST packets through *gateway*.
- i                   Waits *interval* seconds between sending each packet. The default is to wait for 1 second between each packet; when the -f operand is used, the wait interval is 0.01 second.
- I                   Sends multicast datagrams on the network interface specified by the interface host name or IP address.
- h                   An alternate way of specifying the target host instead of as the last argument.

- l If *preload* is specified, *ping* sends the packets as fast as possible before returning to its normal behavior. Only a superuser can use this option.
- L Disables loopback when sending to multicast destinations so that the transmitting host does not see the ICMP requests.
- n Numeric output only. No attempt is made to look up symbolic names for host addresses.
- o Exits successfully after receiving one reply packet.
- p The *pattern* operand allows you to specify up to 16 *pad* bytes to fill out the packet you send. This is useful for diagnosing data-dependent problems in a network. For example, *-p* causes the sent packet to be filled with 1's.
- P Use a pseudo-random sequence for the data instead of the default, fixed sequence of incrementing 8-bit integers. This is useful to obstruct compression on Point-to-Point Protocol (PPP) and other links.
- q Quiet output. Nothing is displayed except the summary lines displayed at startup time and when finished.
- Q Do not display responses such as Network Unreachable ICMP messages concerning the ECHO\_REQUESTs sent.
- r Bypass the normal routing tables and send directly to a host on an attached network. If the host is not on a direct-attached network, an error is returned. This option can be used to ping a local host through an interface that has no route through it.
- R Record route. Includes the RECORD\_ROUTE option in the ECHO\_REQUEST packet and displays the route buffer on returned packets. Note that the IP header is large enough for only eight such routes (only six when using the *-g* option). Many hosts ignore or discard this option.
- s The *packetsize* operand specifies the number of data bytes to be sent. The default is 56, which translates into 64 ICMP data bytes when combined with the 8 bytes of ICMP header data. The maximum allowed value is 65,468 bytes.
- T The *ttl* operand allows you to use the specified time-to-live value.
- t The *tos* allows you to use the specified hexadecimal type of service.
- v Verbose output. Received ICMP packets other than ECHO\_RESPONSE are listed.
- w The *maxwait* operand specifies the number of seconds to wait for a response to a packet before transmitting the next one. The default is 10.0.

When you use *ping* to isolate faults, run it first on the local host to verify that the local network interface is up and running. Subsequently, you can ping hosts and gateways further and further away.

Round-trip times and packet loss statistics are computed. If duplicate packets are received, they are not included in the packet loss calculation, although the round-trip time of these packets is used to calculate the minimum/average/maximum round-trip time numbers.

When the specified number of packets have been sent (and received) or if the program is terminated with a SIGINT, a brief summary is displayed. The summary information can be displayed while *ping* is running by sending a SIGINFO signal (see the *status* argument for stty 1 for more information).

*ping* continually sends one datagram per second, printing one line of output for every ECHO\_RESPONSE returned. On a trusted system with IP security options enabled, if the network idiom is not MONO, *ping* also prints a second line containing the hexadecimal representation of the IP security option in the ECHO\_RESPONSE. If the *-c count* option is given, only that number of requests is sent. No output is



produced if there is no response. When not using the `-f` (flood) option, the first interrupt, usually generated by Ctrl-C or Delete, causes `ping` to wait for its outstanding requests to return. It will wait no longer than the longest round-trip time encountered by previous, successful pings. The second interrupt stops `ping` immediately.

This command is intended for use in network testing, measurement, and management. Because of the load it can impose on the network, it is unwise to use `ping` during normal operations or from automated scripts.

### ICMP packet details

An IP header without options is 20 bytes. An ICMP ECHO\_REQUEST packet contains an additional 8 bytes worth of ICMP header, followed by an arbitrary amount of data. When `packetsize` is specified, this indicates the size of this extra piece of data (the default is 56). Thus, the amount of data received inside of an IP packet of type ICMP ECHO\_REPLY is always 8 bytes more than the requested data space (the ICMP header).

If the data space is at least 8 bytes large, `ping` uses the first 8 bytes of this space to include a time stamp to compute round-trip times. If less than 8 bytes of pad are specified, no round-trip times are given.

### Duplicate and damaged packets

`ping` reports duplicate and damaged packets. Duplicate packets should not occur; when they do, they are often caused by inappropriate link-level retransmissions.

Damaged packets are cause for alarm and often indicate broken hardware somewhere in the `ping` packet path (in the network or in the hosts).

### Trying different data patterns

The (inter)network layer should never treat packets differently based on the data contained in the data portion. Unfortunately, data-dependent problems have been known to occur in networks and remain undetected for long periods of time. Patterns that have problems often do not have sufficient *transitions*, such as a pattern of all ones or all zeroes, or of nearly all ones or zeroes. It is not necessarily enough to specify a data pattern of all zeroes, for example, on the command line, because the pattern that is of interest is at the data link level, and the relationship between what you type and what the controllers transmit can be complicated.

This means that if you have a data-dependent problem, you will probably have to do a lot of testing to find it. You might find a file that either cannot be sent across your network or that takes much longer to transfer than other similar-length files. You can then examine this file for repeated patterns that you can test using the `-p` option of `ping`.

## See also

[rnPing](#)

## pkiShow

Displays existing private key infrastructure (PKI) objects.

### Synopsis

```
pkishow -p port
```

```
pkishow -s
```

```
pkishow -a
```

### Availability

all users

### Description

Use this command to display the existence of PKI objects, such as switch private key, private key passphrase, CSR, root certificate, and switch certificate.

### Operands

This command has the following operands:

- |    |  |
|----|--|
| -a | Displays keys for all the ports.                         |
| -p | Specifies the port number to display specific port keys. |
| -s | Displays keys for the switch entity.                     |

### Examples

To display the keys on port 0:

```
switch:admin> pkishow -p 0

Keys for port 0:

Private Key      : Exist
CSR              : Exist
Certificate      : Empty
Root Certificate: Exist
```

To display the keys for the switch entity:

```
switch:admin> pkishow -s

Keys for Switch

Private Key      : Exist
CSR              : Exist
Certificate      : Empty
Root Certificate: Exist
```

To display all the keys installed on the switch:

```
switch:admin> pkishow -a

Keys for port 0:
Private Key      : Exist
CSR              : Exist
Certificate      : Empty
Root Certificate: Exist
Keys for port 1:
Private Key      : Exist
CSR              : Exist
Certificate      : Empty
Root Certificate: Exist
Keys for port 2:
Private Key      : Exist
CSR              : Exist
Certificate      : Empty
Root Certificate: Exist
Keys for port 3:
Private Key      : Exist
CSR              : Exist
Certificate      : Empty
Root Certificate: Exist
Keys for port 4:
Private Key      : Exist
CSR              : Exist
Certificate      : Empty
Root Certificate: Exist
Keys for port 5:

Private Key      : Exist
CSR              : Exist
Certificate      : Empty
Root Certificate: Exist

Keys for port 6:

Private Key      : Exist
CSR              : Exist
Certificate      : Empty
Root Certificate: Exist

(output truncated)
```

## See also

none

## portCfgDefault

Restore the port configuration to the defaults.

### Synopsis

```
portcfgdefault port
```

### Availability

admin

### Description

Use this command to reset any special configuration values on a port to their factory defaults. The default configuration of the port takes effect using the [portStart](#) or [reboot](#) commands. After running the `portCfgDefault` command, you need to enable the port using the [portEnable](#) command, because the port is disabled by default.

### Operands

This command has the following operand:

<i>port</i>	Specifies the port.
-------------	---------------------

### Examples

To set port 7 to factory defaults:

```
switch:admin> portcfgdefault 7
portcfgdefault is set on port
```

To set ports 14 and 15 to factory defaults:

```
switch:admin> portcfgdefault 14-15
portcfgdefault is set on port 14
portcfgdefault is set on port 15
```

### See also

[portEnable](#)

[portShow](#)

[portStart](#)

[portStop](#)

## portCfgEPort

Displays or sets the port to E\_Port mode.

### Synopsis

```
portcfgeport port [1 | 0]
```

### Availability

admin

### Description

Use this command either to set the port to E\_Port mode or to prevent setting the port to E\_Port mode. If no parameter is given, the command displays the current mode. If the parameter is given, it enables or disables E\_Port mode.

### Operands

This command has the following operands:

<i>port</i>	Identifies the port
	E_Port mode parameters:
1	Enable
2	Disable

### Examples

To display the configured E\_Port mode of port 3:

```
switch:admin> portcfgeport 3
port 3 E_Port mode is: ENABLED
```

To enable E\_Port mode for port 2:

```
switch:admin> portcfgeport 2 1
port 2 E_Port mode is: ENABLED
```

To display the configured E\_Port mode of ports 3 through 5:

```
switch:admin> portcfgeport 3-5
port 3 E_Port mode is: ENABLED
port 4 E_port mode is: ENABLED
port 5 E_Port mode is: ENABLED
```

### See also

[linkCost](#)  
[portCfgSpeed](#)  
[portCfgTopology](#)  
[portDisable](#)  
[portEnable](#)  
[portShow](#)  
[portType](#)

## portCfgEXPort

Sets a port as an EX\_Port and sets and displays EX\_Port configuration parameters.

### Synopsis

```
portcfgexport port [-a admin] [-f fabricid] [-r ratov]
[-e edtov] [-d domainid] [-p pidformat] [-t auto_negotiate_ELP]
```

### Availability

admin

### Description

Use this command to configure an EX\_Port.

This command also displays or changes the EX\_Port configuration. If no optional parameter is given, this command displays the currently configured values; otherwise, it sets the specified attributes to its new value. The port must be stopped (for example, using the [portStop](#) command) prior to setting EX\_Port attributes. The port must be started (for example, using the [portStart](#) command) before it can become active following EX\_Port parameter changes.

When the port is not active, the preferred domain ID is settable. This is the domain ID that is used by the EX\_Port's front phantom domain to request a domain ID from the principal switch. The domain ID received becomes the subsequent preferred domain ID and is the domain ID that is persisted and displayed.

When a port changes from an FL\_Port to an EX\_Port, the topology implicitly changes to point-to-point.

The output display includes:

Front domain WWN displays the WWN of the front domain. If the port is enabled and state is "OK", the edge fabric principal switch's domain ID and WWN also are displayed.

Enable or disable Fabric Parameters using the -t operand. Use this attribute to autonegotiate the values of R\_A\_TOV, E\_D\_TOV, and PID format. If the Fabric Parameters attribute value is autonegotiate, the R\_A\_TOV and E\_D\_TOV values display the negotiated values, indicated by an N next to the value. The negotiated values are specified by the edge switch in the ELP request. If the Fabric Parameter attribute value is User Configured, the actual configured values are displayed. In such a case, the configured values of the EX\_Port must match that of the edge switch, or else the port is disabled. The default configuration for Fabric Parameter is autonegotiate on all EX\_Ports.

If the State is Not OK, R\_A\_TOV and E\_D\_TOV display N/A (not applicable).

The security attributes of the EX\_Port also are displayed. If the EX\_Port is connected to an edge switch without security, the information displays Not Applicable. The Authentication type of None indicates there is no authentication on the port. The remaining security attributes, DH Group, Hash Algorithm, and so forth, are set to Not Applicable.

If the edge switch is in secure mode, and assuming the DH-CHAP passwords are configured on both the router and edge switch, the security attributes are displayed as follows:

Authentication Type

DH Group

Hash Algorithm

Edge fabric's primary  
WWN

WWN of the primary FCS switch in the secure edge fabric that is connected to this EX\_Port. Possible values for this field include:

"WWN of the Primary FCS: The WWN of the primary FCS when the edge fabric is secure and the primary FCS is online.

Edge fabric's version stamp	<p>"No Primary: Indicates the edge fabric is in secure mode, but there is no primary FCS.</p> <p>"N/A: The edge fabric is not in secure mode.</p> <p>Specifies the version of the security database in the fabric and all switches must have the same, or else the port is disabled. Possible values include:</p> <p>"Version stamp string: The version stamp of the security database represented as a string.</p> <p>"N/A: The edge fabric is not in secure mode.</p>
-----------------------------	---

## Operands

This command has the following operands:

-a	Specify 1 to enable or 2 to disable the admin.
-f	Specify 1 to 128 for the fabric ID.
-r	Specify the R_A_TOV used for port negotiation ( $E\_D\_TOV * 2 - 120000$ ).
-e	Specify the E_D_TOV used for port negotiation ( $1000 - R\_A\_TOV / 2$ ).
-d	Specify 1 to 239 for the preferred domain ID.
-p	Specify 1 for core, 2 for extended edge, and 3 for native port ID format. The port ID format is applicable only when -m is set to 0. If the operating mode is not Brocade native, the PID format displays as Not applicable.
-t	Specify 1 to enable or 2 to disable autonegotiate fabric parameters.

## Examples

To display the EX\_Port configuration of port 0:

```
switch:admin> portcfgexport 0

Admin:                enabled
State:                OK
Pid format:           core
Operate mode:         Brocade Native
Edge Fabric ID:       4
Front Domain ID:      160
Principal Switch:      5
Principal WWN:         10:00:00:05:1e:34:11:e5
Front domain WWN:      50:00:51:e1:62:0a:de:00
Fabric Parameters:     Auto Negotiate
R_A_TOV:              10000 (N)
E_D_TOV:              2000 (N)

Authentication Type:  None
DH Group:              N/A
Hash Algorithm:        N/A
Edge fabric's primary WWN: N/A
Edge fabric's version stamp: N/A
```

To set the fabric ID of port 1 to 5 and the PID format to core:

```
switch:admin> portcfgexport 1 -f 5 -p 1
```

To configure port 0 to be an EX\_Port and set the fabric ID to 4:

```
switch:admin> portcfgexport 0 -a 1 -f 4
```

To disable auto-ELP on port 0 of an EX\_Port:

```
switch:admin> portcfgexport 0 -t 2
```

## See also

[portCfgSpeed](#)  
[portDisable](#)  
[portEnable](#)  
[portShow](#)  
[portStart](#)  
[portStop](#)  
[portType](#)  
[secAuthSecret](#)



## portCfgFcip

Displays or sets the FCIP port configuration.

### Synopsis

```
portcfgfcip slot-port-range [-i ipaddress] [-a admin] [-w wwn]  
[-t timeout_enforcement] [-j jumbo_support] [-b bandwidth]  
[-m load_balance_mode {1-, 2-, 3-none}]
```

### Availability

admin

### Description

Use this command to display or set the FCIP port IP configuration. If no optional parameter is given, this command displays the currently configured value; otherwise, it sets the specified attributes to the new value.

### Operands

This command has the following required operand:

<i>slot-port-range</i>	Identifies the slot, port, or range of ports.
------------------------	---

This command has the following optional operands:

<i>-i ipaddress</i>	Sets the remote IP address.
<i>-a admin</i>	Activate or deactivate FCIP as follows: <ol style="list-style-type: none"><li>1 Activate</li><li>2 Deactivate</li></ol>
<i>-w wwn</i>	Sets the remote WWN. If the remote WWN is configured, the MP Router accepts only the incoming FCIP tunnel with the configured WWN; it also only initiates a tunnel to the desired MP Router. If the remote WWN is not configured, the MP Router accepts FCIP connections from any other MP Router.
<i>-t timeout_enforcement</i>	Controls whether or not the FCIP link enforces packet timeouts. If configured for timeout enforcement, each outgoing packet is stamped with the current time. Each incoming packet uses the received timeout to determine if the packet should be dropped. The packet's timestamp and the MP Router's configured WAN_TOV values are compared against the current time. If the packet has been in transit for longer than the configured WAN_TOV time period, the packet is dropped.  Enable or disable timeout enforcement as follows: <ol style="list-style-type: none"><li>1 Enable</li><li>2 Disable</li></ol>
<i>-j jumbo_support</i>	If the network supports jumbo frames (2K max FC frame), use the <i>-j</i> operand to enable jumbo support on the MP Router.  Activate or deactivate jumbo support as follows: <ol style="list-style-type: none"><li>1 Activate</li><li>2 Deactivate</li></ol>

<code>-b bandwidth</code>	If the available bandwidth for FCIP is low, set the value (Mbit/sec) to accomplish better bandwidth utilization. Valid values are 1 to 1000.
<code>-m load_balance_mode</code>	Sets the load balance mode as follows: <ol style="list-style-type: none"> <li>1 Exchange</li> <li>2 SIL_DID</li> <li>3 None</li> </ol> <p>The default is exchange mode.</p>

## Examples

To display the FCIP configuration of port 3:

```
switch:admin> portcfgfcip 3
admin status   : ENABLED
ipaddress      : 1.1.3.1
wwn            : 00:00:00:00:00:00:00:00
Link Available Bandwidth : 1000
Jumbo Support is enabled
WAN_TOV enforcement is disabled
```

To set the IP address of port 1 to 10.1.1.1:

```
switch:admin> portcfgfcip 1 -i 10.1.1.1
port 1 ipaddress is set to: 10.1.1.1
```

## See also

[linkCost](#)  
[portCfgEPort](#)  
[portCfgSpeed](#)  
[portCfgTopology](#)  
[portDisable](#)  
[portEnable](#)  
[portShow](#)  
[portType](#)

## portCfgGige

Displays or sets the IP configuration for a Gigabit Ethernet (GbE) port.

### Synopsis

```
portcfggige port [-i ipaddress] [-n netmask] [-g gateway]  
[-p protocol] [-v version]
```

### Availability

admin

### Description

Use this command to allow display of the port's GbE configuration or to change the configuration modes of operation. If no optional operand is given, this command displays the currently configured value; otherwise, it sets the specified attributes to the new value.

### Operands

This command has the following required operand:

port	Specifies the port.
------	---------------------

This command has the following optional operands:

-i <i>ipaddress</i>	Sets the IP address.
-n <i>netmask</i>	Sets the netmask.
-g <i>gateway</i>	Sets the default gateway for the GbE port.
-p <i>protocol</i>	Sets the protocol; valid values are FCIP and iSCSI.
-v <i>version</i>	Sets the version number of the protocol.

### Examples

To display the IP configuration of port 3:

```
switch:admin> portcfggige 3
```

To set the IP address of port 2 to 10.1.1.1, netmask to 255.255.255.0, and protocol to FCIP version 1:

```
switch:admin> portcfggige 2 -i 10.1.1.1 -n 255.255.255.0 -p fcip -v 1
```

To set the IP address of port 2 to 10.1.1.1, netmask to 255.255.255.0, and protocol to iSCSI version 13:

```
switch:admin> portcfggige 2 -i 10.1.1.1 -n 255.255.255.0 -p iscsi -v 13
```

## See also

[linkCost](#)

[portCfgEPort](#)

[portCfgSpeed](#)

[portCfgTopology](#)

[portDisable](#)

[portEnable](#)

[portShow](#)

[portType](#)

## portCfgLongDistance

Configures a port to support long-distance links.

### Synopsis

```
portcfglongdistance port [distanceLevel]
```

### Availability

admin

### Description

Use this command to display or set the Fibre Channel port long-distance level. This command allows you to allocate enough full-size frames buffers on a particular port to support a long-distance link up to 300 km.

### Operands

This command has the following required operand:

<i>port</i>	Specifies the port.
-------------	---------------------

This command has the following optional operand:

<i>distanceLevel</i>	Specifies the distance level. The value of <i>distanceLevel</i> can be one of the following:
L0	Specifies that the port be a regular switch port. The switch-wide BB_Credit setting is used at these ports.
LE	Supports distances up to 10 km at both 1-Gb/s and 2-Gb/s speeds.
L0.5	Supports distances up to 25 km at both 1-Gb/s and 2-Gb/s speeds.
LS	Supports distances up to 300 km at both 1-Gb/s and 2-Gb/s speeds.

### Examples

To display the distance level for the configured port 7:

```
switch:admin> portcfglongdistance 7
port 7 distance level is L0.5
```

To set the distance level to L0 for port 7:

```
switch:admin> portcfglongdistance 7 L0
Distance level is set to L0 on port 7
```

**See also**

[configShow](#)  
[configure](#)  
[portDisable](#)  
[portEnable](#)  
[portShow](#)  
[portType](#)

## portCfgSpeed

Displays or sets the configured port speed.

### Synopsis

```
portcfgspeed port [speed]
```

### Availability

admin

### Description

Use this command to display or set the configured Fibre Channel port speed. If the *speed* operand is given, the command sets the port to the specified new speed. If no *speed* operand is given, the command displays the currently configured port speed.

The port must be disabled before the speed can be changed.

If you use this command to configure the Gigabit Ethernet (GbE) port speed, the following message is displayed:

```
Port speed is not configurable for GIGE ports.
```

### Operands

This command has the following required operand:

<i>port</i>	Specifies the port.
-------------	---------------------

This command has the following optional operand:

<i>speed</i>	Specifies the speed. The value of <i>speed</i> can be one of the following:
0	AN (autonegotiate)
1	1 Gb/s
2	2 Gb/s

### Examples

To display the configured speed of port 7:

```
switch:admin> portcfgspeed 7
port 7 speed is set to: AN
```

To set the speed of port 1 to 2 Gb/s:

```
switch:admin> portcfgspeed 1 2
port 1 speed is set to: 2G
```

To set the speed of ports 2, 3, 10, and 12 to autonegotiate:

```
switch:admin> portcfgspeed 2,3,10,12 0
port 2 speed is set to: AN
port 3 speed is set to: AN
port 10 speed is set to: AN
port 12 speed is set to: AN
```

## See also

[linkCost](#)

[portCfgEPort](#)

[portCfgTopology](#)

[portDisable](#)

[portEnable](#)

[portShow](#)



## portCfgTopology

Displays or sets the configured port topology.

### Synopsis

```
portcfgtopology port [topology]
```

### Availability

admin

### Description

Use this command to display or set the configured Fibre Channel port topology. If the *topology* parameter is specified, the command sets the port to the specified new topology. If no parameter is specified, the command displays the currently configured port topology.

If the port is configured as an E\_Port or EX\_Port, the topology is implicitly changed to point-to-point.

### Operands

This command has the following required operand:

<i>port</i>	Specifies the port.
-------------	---------------------

This command has the following optional operand:

<i>topology</i>	Specifies the topology. The value of <i>topology</i> can be:
p	Point-to-point

### Examples

To set the topology of port 1 to point-to-point:

```
switch:admin> portcfgtopology 1 p
port 1 topology set to: P-P
```

## See also

[portCfgEPort](#)

[portCfgSpeed](#)

[portDisable](#)

[portEnable](#)

[portShow](#)

[portType](#)

## portDiagClear

Clears the port diagnostic error.

### Synopsis

```
portdiagclear port_list
```

### Availability

admin

### Description

If a port is marked as faulty after running a diagnostic command, another diagnostic cannot be run on the same port (because it is already faulty). Use this command to clear that faulty condition and allow the same or another diagnostic command to run on that port.

If you fix the fault in the port and intend to bring the port online, first run `portDiagClear`, followed by `portStop` and then `portStart`, on the port.

### Operands

This command has the following required operand:

<i>port_list</i>	Specifies a list of ports.
------------------	----------------------------

### Examples

To clear diagnostic errors on ports 0, 3, and 8 through 10:

```
switch:admin> portdiagclear 0,3,8-10  
  
  Diag result of port  0 is cleared  
  Diag result of port  3 is cleared  
  Diag result of port  8 is cleared  
  Diag result of port  9 is cleared  
  Diag result of port 10 is cleared
```

### See also

[portStart](#)

[portStop](#)

## portDiagDisable

Disables the port for diagnostics.

### Synopsis

```
portdiagdisable port_list
```

### Availability

admin

### Description

Use this command to set the port to normal mode if the port was in diagnostic mode. The port must be returned to normal mode after running a diagnostic command in order to resume normal operation of that port. After running all the selected diagnostic commands on a set of ports, all those ports should be returned to normal mode using the `portDiagDisable` command.

Use the [portShow](#) command to view the current port state.

All port LEDs are off after a port is placed in diagnostic mode. If a port fails the diagnostic test, all port LEDs are solid yellow.

### Operands

This command has the following required operand:

<i>port_list</i>	Specifies a list of ports.
------------------	----------------------------

### Examples

To set ports 0, 3, and 8 through 10 to normal mode after running diagnostics:

```
switch:admin> portdiagdisable 0,3,8-10
```

```
Port 0 is now in normal mode
Port 3 is now in normal mode
Port 8 is now in normal mode
Port 9 is now in normal mode
Port 10 is now in normal mode
```

### See also

[portDiagEnable](#)

[portShow](#)

## portDiagEnable

Enables the port for diagnostics.

### Synopsis

```
portdiagenable port_list
```

### Availability

admin

### Description

Use this command to place one or more ports in diagnostic mode, so that a diagnostic command can be run. If a diagnostic command involves multiple ports, all the ports must be enabled for diagnostics first.

After a port is enabled for diagnostics, any number of MP Router diagnostic commands can be run on that port; however, the normal operation of the port ceases.

Diagnostic mode is nonpersistent; it is not retained if the MP Router is rebooted.

Use [portShow](#) to obtain the current port state.

### Operands

This command has the following operand:

<i>port_list</i>	Specifies a list of ports.
------------------	----------------------------

### Examples

To enable ports 0, 3, and 8 through 10 for diagnostics:

```
switch:admin> portdiagenable 0,3,8-10
```

### See also

[portDiagDisable](#)

[portShow](#)

## portDisable

Disables a port.

### Synopsis

```
portdisable port
```

### Availability

admin

### Description

Use this command to disable a port. You can use this command to quickly disable or stop the laser on the port when troubleshooting a connected device. However, use the [portStop](#) command to stop the code to a port for more involved troubleshooting or for reconfiguring the port to Fibre Channel or IP.

### Operands

This command has the following required operand:

<i>port</i>	Specifies the port.
-------------	---------------------

### Examples

To disable port 3:

```
switch:admin> portdisable 3  
port 3 disabled
```

To disable ports 3 through 6:

```
switch:admin> portdisable 3-6  
port 3 disabled  
port 4 disabled  
port 5 disabled  
port 6 disabled
```

### See also

[portEnable](#)

[portShow](#)

[portStart](#)

[portStop](#)

[portType](#)

[switchShow](#)

## portEnable

Enables a port.

### Synopsis

`portenable port`

### Availability

admin

### Description

Use this command to enable a port. This command starts the port laser, unlike the [portStart](#) command, which loads the port code.

### Operands

This command has the following required operand:

*port* Specifies the port.

### Examples

To enable port 3:

```
switch:admin> portenable 3
port 3 enabled
```

To enable ports 3 through 6:

```
switch:admin> portenable 3-6
port 3 enabled
port 4 enabled
port 5 enabled
port 6 enabled
```

### See also

[portDisable](#)

[portShow](#)

[portStart](#)

[portStop](#)

[portType](#)

[switchShow](#)

## portErrShow

Displays a port error summary.

### Synopsis

```
porterrshow
```

### Availability

all users

### Description

Use this command to display an error summary for all ports. One output line is displayed per port; error counters are displayed in ones, thousands (the number is followed by *k*), millions (the number is followed by *m*), or billions (the number is followed by *g*.) For Ethernet ports, some counters display *NA*, if the counters are not applicable.

The display includes:

port type	FC for Fibre Channel; GE for Gigabit Ethernet
frames tx	Frames transmitted
frames rx	Frames received
enc in	Encoding errors inside of frames
crc err	Frames with CRC errors
too shrt	Frames that are too short
too long	Frames that are too long
bad eof	Frames with bad end-of-frame delimiters
enc out	Encoding error outside of frames
disc c3	Class 3 frames discarded
link fail	Link failures (LF1 or LF2 states)
loss sync	Loss of synchronization
loss sig	Loss of signal
frjt	Frames rejected with F_RJT
fbsy	Frames busied with F_BSY



## Examples

To display the port error summary:

```
FabricAP:admin> porterrshow
```

	port	frames		enc	crc	too	too	bad	enc	disc	link	loss	loss	frjt	fbsy
	type	tx	rx	in	err	shrt	long	eof	out	c3	fail	sync	sig		
0:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:	FC	10.9k	10.9k	0	0	0	0	0	0	0	35	4	0	0	12
2:	FC	9.5k	9.5k	0	0	0	0	0	0	0	2	45	0	6	0
3:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:	GE	278	280	NA	0	0	0	NA	NA	0	NA	NA	NA	NA	NA
8:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:	FC	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## See also

[portShow](#)

## portLogClear

Clears port logs.

### Synopsis

```
portlogclear [port_num]
```

### Availability

admin

### Description

Use this command to clear port logs. If no parameter is specified, all port logs are cleared.

Clear the port log before triggering an activity you want to observe. For example, if the port log is cleared immediately before connecting an F\_Port to the MP Router, [portLogShow](#) displays activity related to the F\_Port coming online.

See [portLogShow](#) for a description of port logs.

### Operands

This command has following optional operand:

<i>port_num</i>	Specifies the port number. Only the specified port logs are cleared. Valid port numbers are:
0-15	External ports
16	Bridge port (an internal port)
17	Central processor (CP)

### Examples

To clear the port log for port 9:

```
switch:admin> portlogclear 9
portlog of port 9 cleared
```

To clear all port logs:

```
switch:admin> portlogclear
All portlogs cleared
```

### See also

[portLogDisable](#)

[portLogDump](#)

[portLogEnable](#)

[portLogShow](#)

[upTime](#)

## portLogDisable

Disables port logs.

### Synopsis

```
portlogdisable [port_num]
```

### Availability

admin

### Description

Use this command to disable port logs. If no parameter for *port\_num* is specified, all port logs are disabled. If *port\_num* is specified, only the port log for that port is disabled.

See [portLogShow](#) for a description of port logs.



**NOTE:** By default, the port logs are enabled.

### Operands

The following operand is optional:

<i>port_num</i>	Specifies which ports should be disabled. Valid port numbers are:	
0–15	External ports	
16	Bridge port (an internal port)	
17	Central processor (CP)	

### Examples

To disable the port log for port 9:

```
switch:admin> portlogdisable 9
portlog of port 9 disabled
```

To disable all port logs:

```
switch:admin> portlogdisable
All portlogs disabled
```

### See also

[portLogClear](#)

[portLogDump](#)

[portLogEnable](#)

[portLogShow](#)

[upTime](#)

## portLogDump

Displays port logs, without page breaks.

### Synopsis

```
portlogdump [-c count] [port_num]
```

### Availability

admin

### Description

Use this command to display all entries in the port log, without page breaks. The `portLogDump` command is similar to the `portLogShow` command, which paginates the output. If the port log is disabled, an error message is displayed. The actual message varies, depending on the way in which the command is entered, as follows:

- If the command is entered with `port_num` specified, the message is:

```
WARNING: Port log is disabled for this port
```

- If the command is entered using a range for `port_num`, the message is:

```
WARNING: Port log is disabled for port(s)
```

- If the command is entered without operands, the message is:

```
WARNING: Port log is disabled for all ports
```

See `portLogShow` for a description of port logs.

The following fields are displayed:

Time	Date and time of the event.	
Module	Name of the module that logged the event.	
Event	Possible events include:	
	PrtDis	Port disabled.
	PrtEnab	Port enabled.
	PrtStart	Port start.
	PrtStop	Port stop.
	PrtSCN	Port state change.
	IOCTL	IOCTL execution context.
	Tx	Frame transmitted.
	Tx_Ack1	ACK_1 transmitted.
	Rx	Frame received.
	Rx_LC	Received a link control frame.
	Rx_Ack1	Received ACK_1.
	Ct_in	Received a CT-based request.
	Ct_out	Transmitted a CT-based response.
	nbr_sm	FSPF's neighbor state machine state transition.
	RSCN	RSCN transmitted.
	SWRSCN	Switch RSCN transmitted.

	Debug	Debug information.
Port		Port number of the affected port.
Len		Frame length; 0 for non-frame-related log entries.
Log Info		Log record information. The log record might be in string format (for example, in PrtSCN event) or a list of integers (for example, Tx/Rx events).

Refer to the *HP StorageWorks XPath OS 7.4.x system error messages reference guide*.

## Operands

The following operands are optional:

<code>-c count</code>	Maximum number of lines to display. Only the most recent <i>count</i> entries are displayed.	
<code>port_num</code>	Only the specified port logs are displayed. Valid port numbers are:	
	0-15	External ports
	16	Bridge port (an internal port)
	17	Central processor (CP)

## Examples

To display the port log for port 12:

```
switch:admin> portlogdump 12

Total records present      = 81
Number of records displayed = 81

Time          Module  Event   Port  Len  Log info
-----
16:24:35.765 fabctl  PrtSCN  12    0    st=1, Topo=2, Spd=0
16:24:36.076 fabctl  PrtSCN  12    0    st=2, Topo=2, Spd=2
16:24:37.167 fabctl  Tx      12   128  02ffffffd,00ffffffd,01c6ffff,10000000
16:24:37.167 WKA      Rx_Ack1 12    24   c0ffffffd,00ffffffd,01c60001
16:24:37.169 WKA      Tx_Ack1 12    24   c0ffffffd,00ffffffd,01c60001
16:24:37.169 WKA      Rx      12   128  03ffffffd,00ffffffd,01c60001,02000000
16:24:37.170 fabctl  PrtSCN  12    0    st=2, Topo=2, Spd=2
16:24:37.171 fabctl  Tx      12    48  02ffffffd,00ffffffd,01c7ffff,30000018
16:24:37.171 WKA      Rx_Ack1 12    24   c0ffffffd,00ffffffd,01c70001
16:24:37.171 WKA      Tx_Ack1 12    24   c0ffffffd,00ffffffd,01c70001
```

16:24:37.171	WKA	Rx	12	48	03ffffffd,00ffffffd,01c70001,02000000
16:24:37.172	WKA	Tx_Ack1	12	24	c0ffffffd,00ffffffd,1ba70001
16:24:37.172	WKA	Rx	12	64	02ffffffd,00ffffffd,1ba7ffff,14000000
16:24:37.172	fabctl	nbr_sm	12	0	Down to Down
16:24:37.172	fabctl	nbr_sm	12	0	Down to Init
16:24:37.172	WKA	Tx_Ack1	12	24	c0ffffffd,00ffffffd,08860001
16:24:37.172	WKA	Rx	12	92	02ffffffd,00ffffffd,0886ffff,70840900
16:24:37.172	fabctl	Tx	12	64	02ffffffd,00ffffffd,1ab7ffff,14000000
16:24:37.173	WKA	Rx_Ack1	12	24	c0ffffffd,00ffffffd,1ab70001
16:24:37.173	WKA	Tx_Ack1	12	24	c0ffffffd,00ffffffd,08870001
16:24:37.173	WKA	Rx	12	248	02ffffffd,00ffffffd,0887ffff,111000e0
16:24:37.173	fabctl	Tx	12	92	02ffffffd,00ffffffd,01c8ffff,70840900
16:24:37.173	WKA	Rx_Ack1	12	24	c0ffffffd,00ffffffd,01c80001
16:24:37.173	WKA	Tx_Ack1	12	24	c0ffffffd,00ffffffd,08880001
16:24:37.173	WKA	Rx	12	40	02ffffffd,00ffffffd,0888ffff,12000000
16:24:37.174	fabctl	Tx	12	248	02ffffffd,00ffffffd,01c9ffff,111000e0
16:24:37.174	WKA	Rx_Ack1	12	24	c0ffffffd,00ffffffd,01c90001
16:24:37.174	WKA	Tx_Ack1	12	24	c0ffffffd,00ffffffd,1ba80001
16:24:37.174	WKA	Rx	12	64	02ffffffd,00ffffffd,1ba8ffff,14000000
16:24:37.175	fabctl	Tx	12	40	02ffffffd,00ffffffd,01caffff,12000000
16:24:37.175	WKA	Rx_Ack1	12	24	c0ffffffd,00ffffffd,01ca0001
16:24:37.175	WKA	Tx_Ack1	12	24	c0ffffffd,00ffffffd,1ba90001
16:24:37.175	WKA	Rx	12	224	02ffffffd,00ffffffd,1ba9ffff,15000000
16:24:37.175	fabctl	Tx	12	64	02ffffffd,00ffffffd,1ab8ffff,14000000
16:24:37.176	WKA	Rx_Ack1	12	24	c0ffffffd,00ffffffd,1ab80001
16:24:37.176	fabctl	nbr_sm	12	0	Init to DBExch
16:24:37.176	WKA	Tx_Ack1	12	24	c0ffffffd,00ffffffd,01c80001
16:24:37.176	WKA	Rx	12	32	03ffffffd,00ffffffd,01c80001,01000000

## See also

[portLogClear](#)

[portLogDisable](#)

[portLogEnable](#)

[portLogShow](#)

[upTime](#)

## portLogEnable

Enables port logs.

### Synopsis

```
portlogenable [port_num]
```

### Availability

admin

### Description

Use this command to enable port logs. If no parameter is specified, all port logs are enabled. If *port\_num* is specified, only the port log for the specified ports are enabled.



**NOTE:** By default, the port logs are enabled.

### Operands

The following operand is optional:

<i>port_num</i>	Only the specified port log is enabled. Valid port numbers are:	
0-15	External ports	
16	Bridge port (an internal port)	
17	Central processor (CP)	

### Examples

To enable the port log for port 9:

```
switch:admin> portlogenable 9
portlog of port 9 enabled
```

To enable all port logs:

```
switch:admin> portlogenable
All portlogs enabled
```

### See also

[portLogClear](#)

[portLogDisable](#)

[portLogDump](#)

[portLogShow](#)

[upTime](#)

## portLogShow

Displays port activity logs.

### Synopsis

```
portlogshow [-c count] [port_num]
```

### Availability

admin

### Description

Use this command to display port logs, paginated. The `portLogShow` command is similar to `portLogDump`, which does not paginate the output.

A port log internally stores entries for each port as a circular buffer. Each port has space to store 2048 log entries. If a port log is disabled, an error message is displayed. The actual message varies, depending on the way in which the command is entered, as follows:

- If the command is entered using a range for *port\_num*:

```
WARNING: Port log is disabled for port(s)
```

- If the command is entered without operands:

```
WARNING: Port log is disabled for all ports
```

- If the command is entered with *port\_num* specified:

```
WARNING: Port log is disabled for this port
```

The following fields are displayed:

Time	Date and time of the event.	
Module	Name of the module that logged the event.	
Event	Possible events include:	
	PrtDis	Port disabled.
	PrtEnab	Port enabled.
	PrtStart	Port start.
	PrtStop	Port stop.
	PrtSCN	Port state change.
	IOCTL	IOCTL execution context.
	Tx	Frame transmitted.
	Tx_Ack1	ACK_1 transmitted.
	Rx	Frame received.
	Rx_LC	Received a link control frame.
	Rx_Ack1	Received ACK_1.
	Ct_in	Received a CT-based request.
	Ct_out	Transmitted a CT-based response.
	nbr_sm	FSPF's neighbor state machine state transition.
	RSCN	RSCN transmitted.
	SWRSCN	Switch RSCN transmitted.
	Debug	Debug information.



Port	Port number of the affected port.
Len	Frame length; 0 for non-frame-related log entries.
Log Info	Log record information. The log record might be in string format (for example, in PrtSCN event) or a list of integers (for example, Tx/Rx events).

Refer to the *HP StorageWorks XPath OS 7.4.x system error messages reference guide*.

## Operands

The following operands are optional:

<code>-c count</code>	Maximum number of lines to display. Only the most recent <i>count</i> entries are displayed.
<code>port_num</code>	Only the specified port logs are displayed. Valid port numbers are: 0–15            External ports 16             Bridge port (an internal port) 17             Central processor (CP) Leave this value empty to display all port logs.

## Examples

To display the port log for port 8:

```
switch:admin> portlogshow 8
Total records present      = 25
Number of records displayed = 25
```

Time	Module	Event	Port	Len	Log info
18:36:52.036	fabctl	PrtSCN	08	0	st=1, Topo=2, Spd=0
18:36:52.361	WKA	Rx	08	140	22fffffe,00000000,01a6ffff,04000000
18:36:52.362	fabctl	PrtSCN	08	0	st=2, Topo=2, Spd=2
18:36:52.365	fabctl	Debug	08	0	Loading routes
18:36:52.379	fabctl	Tx	08	140	23640800,00fffffe,01a60001,02000000
18:36:52.379	WKA	Rx	08	140	22fffffc,00640800,02ceffff,03000000
18:36:52.382	nsd	Tx	08	140	23640800,00fffffc,02ceffff,02000000
18:36:52.382	WKA	Rx	08	32	22fffffd,00640800,02cdffff,62000000
18:36:52.383	fabctl	Tx	08	28	23640800,00fffffd,02cd0001,02000000
18:36:52.383	WKA	Ct_in	08	52	02fffffc,00640800,02d1ffff,01000000
18:36:52.384	nsd	Tx	08	40	03640800,00fffffc,02d1ffff,01000000
18:36:52.384	WKA	Ct_in	08	84	02fffffc,00640800,02d0ffff,01000000
18:36:52.384	nsd	Tx	08	40	03640800,00fffffc,02d0ffff,01000000
18:36:52.385	WKA	Ct_in	08	76	02fffffc,00640800,02d7ffff,01000000
18:36:52.389	nsd	Tx	08	40	03640800,00fffffc,02d7ffff,01000000
18:36:52.389	WKA	Rx	08	40	22fffffc,00640800,0288ffff,05000000

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18:36:52.390	nsd	Tx	08	28	23640800,00ffffffc,0288ffff,02000000
18:36:52.391	WKA	Rx	08	140	22ffffffc,00640800,02d6ffff,03000000
18:36:52.394	nsd	Tx	08	140	23640800,00ffffffc,02d6ffff,02000000
18:36:52.394	WKA	Ct_in	08	44	02ffffffc,00640800,02d9ffff,01000000
18:36:52.404	msd	Tx	08	140	22640800,0064f1a8,5005ffff,03000000
18:36:52.404	msd	Tx	08	32	22640800,0064f1a8,5006ffff,78000000
18:36:52.404	msd	Tx	08	40	22640800,0064f1a8,5005ffff,05000000
18:36:55.326	nsd	Ct_out	08	0	ns query acc 171 5
18:36:55.327	nsd	Tx	08	60	03640800,00ffffffc,02d90001,01000000

## See also

[portLogClear](#)

[portLogDisable](#)

[portLogDump](#)

[portLogEnable](#)

[upTime](#)

## portLoopbackTest

Tests the wire-side transmitting and receiving paths of one or more ports.

### Synopsis

```
portloopbacktest [-p port_list] [-n frame_count] [-l length] [-s speed]  
[-m mac] [-b loopback]
```

### Availability

admin

### Description

Use this command to test the wire-side operation of one or more ports. This test generates frames from a port and loops them back to itself. The loopback path can be either internal or external.

Each participating port is both a frame producer and a frame consumer. The transmitting and receiving operations happen in parallel. The transmitter attempts to send out frames, independent of the status of the receiver.

All ports involved in the test must be diagnostics-enabled prior to running this test.

### Operands

This command has the following operands:

<i>-p port_list</i>	Specifies a list of source ports. The default value is all ports.
<i>-n frame_count</i>	Specifies the number of frames to send to each destination. The default value is 256.
<i>-l length</i>	Specifies the payload length of the test frames. The default value is 1024.
<i>-s speed</i>	Specifies Fibre Channel speed mode. The default value is 2 Gb. 0 Autonegotiate 1 1 Gb 2 2 Gb
<i>-m mac</i>	Specifies the MAC layer to activate. The default is Fibre Channel. 0 Fibre Channel 1 Gigabit Ethernet
<i>-b loopback</i>	Specifies the loopback mode. The default is internal loopback. 0 Internal loopback through the serializer/deserializer (SERDES) 1 External loopback through loopback plug or fiber

## Examples

To send out 1024 frames from ports 0 and 1 in Fibre Channel mode:

```
switch:admin> portloopbacktest -p 0-1 -n 256 -l 1024 -b 0 -s 2 -m 0
portloopbacktest -p 0-1 -n 256 -l 1024 -b 0 -s 2 -m 0
Port Tx fr      Tx bytes      Rx fr      Rx bytes      Deli Size In    Out    RSLT
---- -
0000 00000100 0000000041C00 00000100 0000000041C00 0000 0000 0000 0000 PASS
0001 00000100 0000000041C00 00000100 0000000041C00 0000 0000 0000 0000 PASS
```

To send out 1024 frames from ports 12 and 13 in Gigabit Ethernet mode:

```
switch:admin> portloopbacktest -p 12-13 -n 1024 -l 1024 -m 1
portloopback -p 12-13 -n 1024 -l 1024 -b 0 -s 2 -m 1
Port Tx fr      Tx bytes      Rx fr      Rx bytes      CrcT CrcR BadT BadR RSLT
---- -
000C 00000400 000000104800 00000400 000000104800 0000 0000 0000 0000 PASS
000D 00000400 000000104800 00000400 000000104800 0000 0000 0000 0000 PASS
```

## See also

[crossPortTest](#)

[portDiagDisable](#)

[portDiagEnable](#)

[spinSilk](#)

## portName

Displays or sets the configured port name.

### Synopsis

`portname port [portname]`

### Availability

admin

### Description

Use this command to display or set the configured port name. If a parameter is specified for *portname*, the command sets the port to the specified new port name. If no parameter is specified for *portname*, the command displays the currently configured port name.

### Operands

This command has the following optional operand:

<i>portname</i>	Specifies the port name. The maximum name length is 32 characters. The name must be either letters, digits, underscores, or spaces only. The first character of the name must be either a letter or a digit.
-----------------	--

### Examples

To display the configured name of port 8:

```
switch:admin> portname 8
Port 8 name: port_8
```

To set the name of port 8 to "port 3\_8":

```
switch:admin> portname 8 port3_8
port 8 set to name port3_8
```

### See also

[portShow](#)

## portPerfShow

Displays port throughput numbers.

### Synopsis

```
portperfshow [interval]
```

### Availability

all users

### Description

Use this command to display port throughput numbers for all ports on the MP Router. One output line is displayed every five seconds (or longer if *interval* is specified) until you press Ctrl-C. The command and port number heading is repeated every 16 lines.

The `Total` column displays the sum of all throughput values of all ports.

The numbers displayed represent the number of bytes received and the number of bytes transmitted per second. Throughput numbers are displayed as either bytes/second, kilobytes/second (the number is followed by *k*), megabytes/second (the number is followed by *m*), or (for `Total` column alone) gigabytes/second (the number is followed by *g*).

This information is used to monitor port performance.

### Operands

This command has the following optional operand:

<i>interval</i>	The interval, in seconds, between each sample. The minimum interval allowed is 5 seconds. If an interval is not specified, a default interval of 5 seconds is used.
-----------------	---

### Examples

To display port throughput numbers for all ports on the MP Router at the default display interval of 5 seconds:

```
switch:admin> portperfshow
Data Sampled every 5 seconds.
```

```
portperfshow 5
```

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	
0	0	0	0	0	0	0	0	185m	0	0	185m	0	0	0	0	371m
0	0	0	0	0	0	0	0	189m	0	0	189m	0	0	0	0	379m
0	0	0	0	0	0	0	0	186m	0	0	186m	0	0	0	0	373m
0	0	0	0	0	0	0	0	186m	0	0	186m	0	0	0	0	373m
0	0	0	0	0	0	0	0	188m	0	0	188m	0	0	0	0	377m
0	0	0	0	0	0	0	0	189m	0	0	189m	0	0	0	0	379m
0	0	0	0	0	0	0	0	189m	0	0	189m	0	0	0	0	379m

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0	0	0	0	0	0	0	0	186m	0	0	186m	0	0	0	0	373m
0	0	0	0	0	0	0	0	187m	0	0	187m	0	0	0	0	375m
0	0	0	0	0	0	0	0	189m	0	0	189m	0	0	0	0	379m
0	0	0	0	0	0	0	0	186m	0	0	186m	0	0	0	0	373m
0	0	0	0	0	0	0	0	186m	0	0	186m	0	0	0	0	373m
0	0	0	0	0	0	0	0	189m	0	0	189m	0	0	0	0	379m
0	0	0	0	0	0	0	0	186m	0	0	186m	0	0	0	0	373m
0	0	0	0	0	0	0	0	186m	0	0	186m	0	0	0	0	373m
0	0	0	0	0	0	0	0	187m	0	0	186m	0	0	0	0	374m
portperfshow 5																
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	
-----																
0	0	0	0	0	0	0	0	185m	0	0	185m	0	0	0	0	371m

**See also**  
[portShow](#)

## portRouteInfo

Displays port routing tables for a specific port.

### Synopsis

```
portrouteinfo port_number
```

### Availability

all users

### Description

Use this command to display a given port's routing information.

### Operands

This command has the following required operand:

*port\_number*                      Specifies the port number.

### Examples

To display port routing tables for port 1:

```
switch:admin> portrouteinfo 1
Domain Id = 58 Exit Port = 13
Domain Id = 70 Exit Port = 4
Domain Id = 71 Exit Port = 11
Domain Id = 73 Exit Port = 1
Domain Id = 76 Exit Port = 1
Domain Id = 78 Exit Port = 5
Domain Id = 79 Exit Port = 6
Domain Id = 80 Exit Port = 4
Domain Id = 81 Exit Port = 5
Domain Id = 100 Exit Port = 6
Domain Id = 116 Exit Port = 1
```

### See also

[fabricShow](#)

[switchShow](#)

[topologyShow](#)

[urouteShow](#)



## portShow

Displays port configuration, status, and traffic statistics.

### Synopsis

```
portshow port
```

### Availability

all users

### Description

Use this command to display all port configuration information, including the operational status and traffic statistics.

The command output includes:

#### Name

##### State

STARTED	Port configuration state is started.
STOPPED	Port configuration state is stopped.
UP	Port operational state is up.
DOWN	Port operational state is down.
DIAGNOSTIC	Port operational state is in diagnostic mode.
DOWNLOADING_CODE	Port is downloading code.

##### Type

FC	Fibre Channel
GIGE	Gigabit Ethernet

##### Link Status

ENABLED	Link configuration status is enabled.
DISABLED	Link configuration status is disabled.
UP	Link operational status is up.
DOWN	Link operational status is down.

##### Topology

P-P	Point-to-point
-----	----------------

##### Speed

1G	1 Gb/s
2G	2 Gb/s
AN	Autonegotiate

##### Link Cost

0 (Auto)	Default cost is inversely proportional to the speed.
1 Gb/s	Link cost is 1000.
2 Gb/s	Link cost is 500.
1-65535	Link cost has a suffix of <code>STATIC</code> .

##### WWN

Displays the world wide name.

EX_Port		
Enabled		The port is configured to be an EX_Port.
Disabled		No EX_Port is displayed if the port is not configured to be an EX_Port.
Fabric ID		The fabric ID assigned to this EX_Port, which is the edge fabric attached to this EX_Port.
Fabric params		The fabric parameters for port negotiation with the neighbor E_Port in the EX_Port-attached edge fabric. Fabric parameters include R_A_TOV, E_D_TOV, and Port ID format.
Front Phantom		Front phantom domain information presented by the EX_Port, including the preferred (nonactive) or actual (active) domain ID and WWN for the front domain.
Pr Switch Info		Information on the principal switch of the edge fabric attached to the EX_Port, including the domain ID and WWN of the principal switch.
Licensed		
YES		Port is licensed.
NO		Port has failed diagnostics.
Diag Result		
PASSED		Port has passed diagnostics.
FAILED		Port has failed diagnostics.
Protocol		Applies only to GbE ports. The supported protocol is FCIP.

## Operands

This command has the following required operand:

*port*                                Specifies the port.

## Examples

To display information about port 1, which is in point-to-point mode:

```
switch:admin> portshow 1
      port 1  info
              Configuration  Current
Name :      port_1
State:      STARTED          UP
Type :      FC               FC
Link Status: ENABLED         UP
Topology:   P-P              P-P
Speed:      AN               2G
LinkCost:   800 (STATIC)
WWN:        20:01:00:05:1e:13:55:00

Licensed      : YES

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```

```

Diag result      : PASSED

inFrames:        0
outFrames:        0
inOctets:         0
outOctets:        0
discards:         0

```

To display information about port 2, which is a GbE port:

```

switch:admin> portshow 2
               port  2  info
               Configuration  Current
Name :         port_2
State:         STARTED        UP
Type :         GIGE           GIGE
Link Status:   ENABLED        UP
IP addr:       10.50.50.2      10.50.50.2
Net mask:      255.255.255.0   255.255.255.0
Default route: 10.50.50.0      10.50.50.0
Mac address:   00:05:1e:31:29:92

Protocol:      fcip ver 1      fcip ver 1

Licensed      : YES

Diag result    : PASSED

```

To display information about port 2, which is an EX\_Port:

```

switch:admin> portshow 2
               port  2  info
               Configuration  Current
Name :         port_2
State:         STARTED        UP
Type :         FC             FC
Link Status:   ENABLED        UP
Topology:      P-P            P-P
Speed:         AN              2G

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```

```
LinkCost:          AUTO          500
WWN:               20:02:00:05:1e:13:03:00

EX_Port Mode:      Enabled
Fabric ID: 5
Fabric params:     R_A_TOV: 10000  E_D_TOV: 2000  PID fmt: core
Front Phantom:     Dom ID: 3      WWN: 50:00:51:e1:30:30:0e:02
Pr Switch Info:    Dom ID: 2 WWN: 10:00:00:60:69:c0:20:ed

Licensed           : YES

Diag result        : PASSED

inFrames:          8221407
outFrames:          8222802
inOctets:           5469644108
outOctets:          11598160236
discards:           0
```

## See also

[linkCost](#)  
[portCfgEPort](#)  
[portCfgEXPort](#)  
[portCfgGige](#)  
[portCfgSpeed](#)  
[portCfgTopology](#)  
[portDisable](#)  
[portEnable](#)  
[portStart](#)  
[portStop](#)  
[portType](#)  
[switchShow](#)

## portStart

Starts a port.

### Synopsis

```
portstart port
```

### Availability

admin

### Description

Use this command to start a port. This command loads the port code, unlike the [portEnable](#) command, which enables the port laser.

### Operands

This command has the following required operand:

<i>port</i>	Specifies the port.
-------------	---------------------

### Examples

To start port 3:

```
switch:admin> portstart 3  
port 3 started
```

To start ports 3 through 6:

```
switch:admin> portstart 3-6  
port 3 started  
port 4 started  
port 5 started  
port 6 started
```

### See also

[portDisable](#)

[portEnable](#)

[portShow](#)

[portStop](#)

[portType](#)

[switchShow](#)

## portStatsShow

Displays port counters.

### Synopsis

```
portstatsshow port
```

### Availability

all users

### Description

Use this command to display port counters.

### Operands

This command has the following required operand:

*port* Specifies the port.

### Examples

To display counters for port 1:

```
switch:admin> portstatsshow 1

Port 1 Counters
Class 2 Counters
inFrames:    0
outFrames:   0
inOctets:    0
outOctets:   0

Class 3 Counters
inFrames:    4268
outFrames:   1567
inOctets:   5338532
outOctets:   97320

Class F Counters
inFrames:    0
outFrames:   0
inOctets:    0
outOctets:   0
discards:    0
rjtFrames:   0
bsyFrames:   0

Error Counters
Delimiter:    0
TxCreditZero: 0
InsideFrame:  0
OutsideFrame: 0

FC Software Counters
anyCrc:       0      badCrc:       0
badPriSeq:    0      badTxWords:  20
lossOfSync:   4      linkFailure:  37
```

### See also

[portShow](#)

## portStop

Stops a port.

### Synopsis

```
portstop port
```

### Availability

admin

### Description

Use this command to stop a port. This command unloads the port code, unlike the [portDisable](#) command, which disables the port laser.

### Operands

This command has the following required operand:

<i>port</i>	Specifies the port.
-------------	---------------------

### Examples

To stop port 3:

```
switch:admin> portstop 3  
port 3 stopped
```

To stop ports 3 through 6:

```
switch:admin> portstop 3-6  
port 3 stopped  
port 4 stopped  
port 5 stopped  
port 6 stopped
```

### See also

[portDisable](#)

[portEnable](#)

[portShow](#)

[portStart](#)

[portType](#)

## portType

Displays or sets the configured port type.

### Synopsis

```
porttype port [porttype]
```

### Availability

admin

### Description

Use this command to display or set the configured port type. If the *porttype* parameter is given, the command sets the port to the specified new port type; otherwise, it displays the currently configured port type.

### Operands

The optional *porttype* parameter is defined as:

f	Fibre Channel
g	Gigabit Ethernet



**NOTE:** See [portCfgGige](#) and [portCfgEXPort](#) for additional port configuration information.

### Examples

To display the configured type of port 8:

```
switch:admin> porttype 8
Port 8 type is: GIGE
```

To set the type of port 8 to Fibre Channel:

```
switch:admin> porttype 8 f
port 8 set to type FC
```

To display the types of ports 7 through 9:

```
switch:admin> porttype 7-9
Port 7 type is: FC
Port 8 type is: GIGE
Port 9 type is: FC
```

### See also

[portCfgEXPort](#)

[portCfgGige](#)

[portShow](#)

[portStart](#)

[portStop](#)



## ps

Displays processes status.

### Synopsis

```
ps [-acCehjKlmrSTuvwx] [-M core] [-N system] [-O fmt] [-o fmt] [-p pid]  
[-t tty] [-U username] [-W swap]
```

```
ps [-L]
```

### Availability

admin

### Description

Use this command to display a header line followed by lines containing information about processes that have controlling terminals. This information is sorted by controlling terminal and, among processes with the same controlling terminal, process ID.

The information display is based on a set of selected keywords (see the `-L`, `-O`, and `-o` operands). The default output format for each process includes the process ID, controlling terminal, CPU time (including both user and system time), state, and associated command.

### Operands

The operands are as follows:

<code>-a</code>	Displays information about other users' processes, as well as your own.
<code>-c</code>	Does not display the full command and arguments; displays only the executable name. This can be somewhat confusing; for example, all <code>sh</code> scripts are displayed as <code>sh</code> .
<code>-C</code>	Changes the way the CPU percentage is calculated by using a <i>raw</i> CPU calculation that ignores <i>resident</i> time (this normally has no effect).
<code>-e</code>	Displays the environment. The environment for other users' processes can be displayed only by the superuser.
<code>-h</code>	Repeats the information header as often as necessary to guarantee one header per page of information.
<code>-j</code>	Displays information associated with the keywords: <code>user</code> , <code>pid</code> , <code>ppid</code> , <code>pgid</code> , <code>sess</code> , <code>jobc</code> , <code>state</code> , <code>tt</code> , <code>time</code> , and <code>command</code> .
<code>-K</code>	Disables the fallback <code>/proc</code> -based method. Note that the <code>/proc</code> -based method is used only if the ordinary <code>kvm</code> method is not possible.
<code>-L</code>	Lists the set of available keywords.
<code>-l</code>	Displays information associated with the following keywords: <code>uid</code> , <code>pid</code> , <code>ppid</code> , <code>cpu</code> , <code>pri</code> , <code>nice</code> , <code>vsz</code> , <code>rss</code> , <code>wchan</code> , <code>state</code> , <code>tt</code> , <code>time</code> , and <code>command</code> .
<code>-M core</code>	Extracts values associated with the name list from the specified core instead from the default <code>/dev/kmem</code> file. The <code>-M</code> option implies the <code>-K</code> option.
<code>-m</code>	Sorts by memory usage instead of by process ID.
<code>-N system</code>	Extracts the name list from the specified system instead of from the default <code>/netbsd</code> file.

<code>-O <i>fmt</i></code>	Adds the information associated with the space- or comma-separated list of keywords specified after the process ID in the default information display. Keywords might be appended with an equal sign (=) and a string, causing the printed header to use the specified string instead of the standard header.
<code>-o <i>fmt</i></code>	Displays information associated with the space- or comma-separated list of keywords specified. Keywords might be appended with an equal sign (=) and a string, causing the printed header to use the specified string instead of the standard header.
<code>-p <i>pid</i></code>	Displays information associated with the specified process ID.
<code>-r</code>	Sorts by current CPU usage instead of by process ID.
<code>-S</code>	Changes the way the process time is calculated by summing all exited children to their parent process.
<code>-T</code>	Displays information about processes attached to the device associated with the standard input.
<code>-t <i>tty</i></code>	Displays information about processes attached to the specified terminal device. Use a question mark (?) for processes not attached to a terminal device and a minus sign (-) for processes that have been revoked from their terminal device.
<code>-U <i>username</i></code>	Displays processes belonging to the user whose user name or UID has been given to the <code>-U</code> switch.
<code>-u</code>	Displays information associated with the following keywords: <code>user</code> , <code>pid</code> , <code>%cpu</code> , <code>%mem</code> , <code>vsz</code> , <code>rss</code> , <code>tt</code> , <code>state</code> , <code>start</code> , <code>time</code> , and <code>command</code> . The <code>-u</code> option implies the <code>-r</code> option.
<code>-v</code>	Displays information associated with the following keywords: <code>pid</code> , <code>state</code> , <code>time</code> , <code>sl</code> , <code>re</code> , <code>pagein</code> , <code>vsz</code> , <code>rss</code> , <code>lim</code> , <code>tsiz</code> , <code>%cpu</code> , <code>%mem</code> , and <code>command</code> . The <code>-v</code> option implies the <code>-m</code> option.
<code>-W <i>swap</i></code>	Extracts swap information from the specified file instead of from the default <code>/dev/drum</code> file.
<code>-w</code>	Uses 132 columns to display information instead of the default, which is your window size. If the <code>-w</code> option is specified more than once, <code>ps</code> uses as many columns as necessary, without regard for your window size.
<code>-x</code>	Displays information about processes without controlling terminals.

If the `ps` command cannot extract process information directly from the kernel (for example, due to an incorrect `-N` option or `kvm`-based reasons), it currently uses an experimental fallback method to gather as much information as possible through the limited interface if the `/proc` file system is mounted. (See `mount_procfs` for more details.) The `ps` command verifies that `/proc` is a `procfs` file system before proceeding. The `-K` option disables this fallback `/proc`-based lookup.

The following is a complete list of available keywords:

<code>%CPU</code>	The CPU utilization of the process; this is a decaying average over up to a minute of previous (real) time. Because the time base over which this is computed varies (since processes might be extremely recent), it is possible for the sum of all <code>%CPU</code> fields to exceed 100 percent.	
<code>%mem</code>	The percentage of real memory used by this process.	
<code>flags</code>	The flags (in hexadecimal) associated with the process, as in the include file <code>sys/proc.h</code> : <code>1 -column P_NOCLDSTOP P_NOCLDSTOP</code> .	
	<code>P_ADVLOCK</code>	<code>0x00000001</code> Process may hold a POSIX advisory lock.
	<code>P_CONTROLT</code>	<code>0x00000002</code> Process has a controlling terminal.
	<code>P_INMEM</code>	<code>0x00000004</code> Process is loaded into memory.

	P_NOCLDSTOP	0x00000008	No P_NOCLDSTOP when children stop.
	P_PPWAIT	0x00000010	Parent is waiting for child to exec/exit.
	P_PROFIL	0x00000020	Process has started profiling.
	P_SELECT	0x00000040	Selecting; wakeup/waiting danger.
	P_SINTR	0x00000080	Sleep is interruptible.
	P_SUGID	0x00000100	Process had set ID privileges since last exec.
	P_SYSTEM	0x00000200	System process: no sigs, stats or swapping.
	P_TIMEOUT	0x00000400	Timing out during sleep.
	P_TRACED	0x00000800	Process is being traced.
	P_WAITED	0x00001000	Debugging process has waited for child.
	P_WEXIT	0x00002000	Working on exiting
	P_EXEC	0x00004000	Process called <code>execve</code> .
	P_OWEUPC	0x00008000	Owe process an <code>addupc()</code> call at next ast.
	P_FSTRACE	0x00010000	Tracing through file system.
	P_NOCLDWAIT	0x00020000	No zombies when children die.
lim	The soft limit on memory used, specified through a call to <code>setrlimit</code> .		
lstart	The exact time the command started, using the <code>%C</code> format described in <code>strftime</code> .		
nice	The process scheduling increment ( <code>setpriority</code> ).		
rss	The real memory (resident set) size of the process (in 1024-byte units).		
start	The time the command started. If the command started less than 24 hours ago, the start time is displayed using the <code>%l:%M%p</code> format described in <code>strftime</code> . If the command started fewer than 7 days ago, the start time is displayed using the <code>%a%p</code> format. Otherwise, the start time is displayed using the <code>%e%b%y</code> format.		
state	The state is given by a sequence of letters: for example, <code>RWNA</code> . The first letter indicates the run state of the process:		
	D	Marks a process in disk (or other short-term, uninterruptible) wait.	
	I	Marks a process that is idle (sleeping for longer than 20 seconds).	
	R	Marks a runnable process.	
	S	Marks a process that is sleeping for less than 20 seconds.	
	T	Marks a stopped process.	
	Z	Marks a dead process (a <i>zombie</i> ).	
	Additional characters indicate other state information:		
	+	The process is in the foreground process group of its control terminal.	
	<	The process has raised CPU scheduling priority.	
	>	The process has specified a soft limit on memory requirements and is currently exceeding that limit; such a process is (necessarily) not swapped.	

A	The process has asked for random page replacement (VA_ANOM from <code>madvise</code> (for example, a LISP interpreter in a garbage collection)).
E	The process is trying to exit.
K	The process is a kernel thread or system process.
L	The process has pages locked in core (for example, for raw I/O).
N	The process has reduced CPU scheduling priority.
S	The process has asked for FIFO page replacement (VA_SEQL, from <code>madvise</code> , for example, a large image processing program using virtual memory to sequentially address voluminous data).
s	The process is a session leader.
V	The process is suspended during <code>vfork</code> .
W	The process is swapped out.
X	The process is being traced or debugged.
tt	An abbreviation for the path name of the controlling terminal, if any. The abbreviation consists of the two letters following <code>/dev/tty</code> , or for the console, <code>co</code> . This is followed by a <code>-</code> if the process can no longer reach that controlling terminal (for example, it has been revoked).
wchan	The event (an address in the system) on which a process waits. When printed numerically, the initial part of the address is trimmed off and the result is printed in hexadecimal; for example, <code>0x80324000</code> prints as <code>324000</code> .

When printing using the `command` keyword, a process that has exited and has a parent that has not yet waited for the process (in other words, a *zombie*) is listed as `<defunct>`; a process that is blocked while trying to exit is listed as `<exiting>`.

The `ps` command tries to locate the process's argument vector from the user area to print the command name and arguments. This method is not reliable, because a process is allowed to destroy this information. The `ucomm` (accounting) keyword always contains the real command name, contained in the process structure `p_comm` field.

To indicate that the argument vector has been tampered with, `ps` appends the real command name to the output within parentheses if the base name of the first argument in the argument vector does not match the contents of the real command name. A special case is system processes and/or kernel threads that are shown within parentheses, because they do not set their argument vector.

In addition, `ps` checks for the following two situations and does not append the real command name parenthesized:

<code>-shellname</code>	The login process traditionally adds a <code>-</code> in front of the shell name to indicate a login shell. The <code>ps</code> command will not append the parenthesized command name if it matches the name in the first argument of the argument vector, skipping the leading <code>-</code> .
<code>daemonname:</code>	Daemon processes frequently report their current activity by setting their name to be something such as <code>daemonname:current-activity</code> . The <code>ps</code> command does not append the parenthesized command name, if the string preceding the colon ( <code>:</code> ) in the first argument of the argument vector matches the command name.

## Keywords

The following list is a summary of all the available keywords and their meanings. Several of the keywords have aliases (synonyms).

<code>%cpu</code>	Percentage CPU usage (alias <code>pcpu</code> )
<code>%mem</code>	Percentage memory usage (alias <code>pmem</code> )
<code>acflag</code>	accounting flag (alias <code>acflg</code> )
<code>command</code>	Command and arguments
<code>cpu</code>	Short-term CPU usage factor (for scheduling)
<code>flags</code>	The process flags, in hexadecimal (alias <code>f</code> )
<code>inblk</code>	Total blocks read (alias <code>inblock</code> )
<code>jobc</code>	Job control count
<code>holdcnt</code>	Number of holds on the process (if nonzero, process cannot be swapped)
<code>ktrace</code>	Tracing flags
<code>ktracep</code>	Tracing vnode
<code>lim</code>	Memory use limit
<code>logname</code>	Login name of user who started the process
<code>lstart</code>	Time started
<code>majflt</code>	Total page faults
<code>minflt</code>	Total page reclaims
<code>msgrcv</code>	Total messages received (reads from pipes/sockets)
<code>msgsnd</code>	Total messages sent (writes on pipes/sockets)
<code>nice</code>	Nice value (alias <code>ni</code> )
<code>nivcsw</code>	Total involuntary context switches
<code>nsigs</code>	Total signals taken (alias <code>nsignals</code> )
<code>nswap</code>	Total swaps in/out
<code>nvcs</code>	Total voluntary context switches
<code>nwchan</code>	Wait channel (as an address)
<code>oublk</code>	Total blocks written (alias <code>oublock</code> )
<code>p_ru</code>	Resource usage (valid only for zombie)
<code>paddr</code>	Kernel virtual address of the <code>struct proc</code> belonging to the process.
<code>pagein</code>	Pageins (same as <code>majflt</code> )
<code>pgid</code>	Process group number
<code>pid</code>	Process ID
<code>ppid</code>	Parent process ID
<code>pri</code>	Scheduling priority
<code>re</code>	Core residency time (in seconds; 127 = infinity)
<code>rgid</code>	Real group ID
<code>rlink</code>	Reverse link on run queue or 0
<code>rss</code>	Resident set size
<code>rsz</code>	Resident set size + (text size / text use count) (alias <code>rssize</code> )
<code>ruid</code>	Real user ID
<code>ruser</code>	User name (from <code>ruid</code> )
<code>sess</code>	Session pointer

<code>sig</code>	Pending signals (alias <code>pending</code> )
<code>sigcatch</code>	Caught signals (alias <code>caught</code> )
<code>sigignore</code>	Ignored signals (alias <code>ignored</code> )
<code>sigmask</code>	Blocked signals (alias <code>blocked</code> )
<code>sl</code>	Sleep time (in seconds; 127 = infinity)
<code>start</code>	Time started
<code>state</code>	Symbolic process state (alias <code>stat</code> )
<code>svgid</code>	Saved gid from a <code>setgid</code> executable
<code>svuid</code>	Saved uid from a <code>setuid</code> executable
<code>tdev</code>	Control terminal device number
<code>time</code>	Accumulated CPU time, user + system (alias <code>cputime</code> )
<code>tpgid</code>	Control terminal process group ID
<code>tsess</code>	Control terminal session pointer
<code>tsiz</code>	Text size (in KB)
<code>tt</code>	Control terminal name (two letter abbreviation)
<code>tty</code>	Full name of control terminal
<code>ucomm</code>	Name to be used for accounting
<code>uid</code>	Effective user ID
<code>upr</code>	Scheduling priority on return from system call (alias <code>usrpri</code> )
<code>user</code>	User name (from UID)
<code>vsz</code>	Virtual size in KB (alias <code>vsize</code> )
<code>wchan</code>	Wait channel (as a symbolic name)
<code>xstat</code>	Exit or stop status (valid only for stopped or zombie process)

## Files

<code>/dev</code>	Special files and device names
<code>/dev/drum</code>	Default swap device
<code>/dev/kmem</code>	Default kernel memory
<code>/var/run/dev.db</code>	<code>/dev</code> name database
<code>/var/db/kvm.db</code>	System namelist database
<code>/netbsd</code>	Default system namelist
<code>/proc</code>	File system for obtaining process information

## See also

none

## psShow

Displays power supply status.

### Synopsis

psshow

### Availability

all users

### Description

Use this command to display current status for all power supplies in the system. The number of power supplies might vary by chassis type. The same information is also provided by the [chassisShow](#) command.

The power supply status messages include:

OK

FAIL

NOT\_PRESENT

### Operands

none

### Examples

To display the power supply status:

```
switch:admin> psshow
POWER SUPPLY 1 Serial no:12037S1025 Rev:0 Status:OK
POWER SUPPLY 2 Status: NOT_PRESENT
```

### See also

[chassisShow](#)

[fanShow](#)

[switchStatusShow](#)

## quit

Terminates the shell.

### Synopsis

`quit`

### Availability

all users

### Description

This command terminates the shell. The user is logged out of the MP Router.

### Operands

none

### Examples

To log out of the MP Router:

```
switch:admin> quit
```

### See also

[exit](#)



## reboot

Executes a customized reboot command.

### Synopsis

`reboot`

### Availability

admin

### Description

Use this command to invoke a series of actions to shut down ports and other MP Router software components before the MP Router calls the `reboot` command.

### Operands

none

### Examples

To execute the reboot procedure:

```
switch:admin> reboot
```

```
Do you really want to reboot the switch (y, n) y
```

### See also

[fastBoot](#)

## rnPing

Sends IP ping packets through an individual port.

### Synopsis

```
rnping port destinationIpAddress [-l sendBufferSize]
[-n numOfEchoReqs] [-w timeout]
```

### Availability

admin

### Description

Use this command to send ICMP ECHO\_REQUEST packets to network hosts through a specific GbE port. This command performs an IP ping (from a port configured to be in the IP mode) to a remote IP address.



**NOTE:** Use the `rnPing` command to ping remote IP addresses only, not local IP addresses.

### Operands

This command has the following required operand:

<code>port-param destinationIpAddress</code>	Specifies the IP address of the destination host and the port through which the ICMP ECHO_REQUEST packets will be sent.
--	---

This command has the following optional operands:

<code>-l sendBufferSize</code>	Sets the send buffer size.
<code>-n numOfEchoReqs</code>	Sets the number of echo requests.
<code>-w timeout</code>	Sets the timeout, in seconds, to wait for each reply.

### Examples

To send ICMP ECHO\_REQUEST packets to network host 192.168.10.1 through GbE port 3:

```
switch:admin> rnping 3 192.168.10.1
```

### See also

[portCfgGige](#)

[portType](#)

## routeShow

Displays IP static route configuration.

### Synopsis

routeshow

### Availability

all users

### Description

Use this command to display IP static route configuration.

### Operands

none

### Examples

To display IP static route configuration:

```
switch:admin> routeshow

Routing tables

Internet:
Destination      Gateway          Flags
default          10.33.48.1       UG
10.20.0.0         link#3           U
10.33.32.0        link#1           U
10.33.48.1        00:00:0c:07:ac:01 UH
10.33.63.39       00:0b:db:90:37:b9 UH
loopback         127.0.0.1        UGR
localhost        127.0.0.1        UH

Persistent Routes:
Destination      Gateway          Net Mask
-----
```

### See also

none

## secAuthSecret

Manages DH-CHAP secret key information.

### Synopsis

```
secauthsecret [--show] [--set] [--remove <www | domain | switch_name> | --all ]
```

### Availability

admin

### Description

Use this command to display, set, or remove secret key information from the DH-CHAP shared secret key database, which is used for authentication, or to delete the entire database. When you perform a set or remove operation, after the command has completed, new data is saved persistently and becomes effective with the next authentication request on the port.

### Operands

This command has the following optional operands:

<code>--show</code>	Lists the WWNs for which a shared secret is configured.
<code>--set</code>	Sets up shared secrets with a WWN.
<code>--remove &lt;www   domain   switch_name&gt;   --all</code>	Removes the specified WWN entry from the database. If a domain name is specified, it is converted to a WWN and then the entry is removed. If <code>--all</code> is specified, the entire database is removed. If the operand is omitted, the command enters interactive mode.

### Examples

To display the shared secret key database:

```
fcr:admin> secauthsecret --show
```

WWN	DId	Name
-----		
10:00:00:60:69:80:5b:e8	1	switch

To set a shared secret key:

```
fcr:admin> secAuthSecret --set
```

This command sets up secret keys for the DH-CHAP authentication. The minimum length of a secret key is 8 characters and maximum 40 characters. Setting up secret keys does not initiate DH-CHAP authentication. It is performed whenever a port or a switch is enabled.

Following inputs should be specified for each entry.

1. WWN for which secret is being set up.
2. Peer secret: The secret of the peer that authenticates to peer.
3. Local secret: The local secret that authenticates peer.

Press Enter to start setting up shared secrets >

```
Enter WWN, Domain, or switch name (Leave blank when done):  
10:00:00:60:69:80:05:14
```

```
Enter peer secret:
```

```
Re-enter peer secret:
```

```
Enter local secret:
```

```
Re-enter local secret:
```

```
Enter WWN, Domain, or switch name (Leave blank when done):
```

```
Are you done? (yes, y, no, n): [no] y
```

```
Saving data to key store... Done.
```

To remove all shared secret keys:

```
fcr:admin> secAuthSecret --remove --all
```

This command deletes database of DH-CHAP secret keys. If a fabric requires authentication, deleting this database may cause switch to segment from the fabric.

```
Do want to remove secret key database? (yes, y, no, n): [no] y
```

```
Deleting secret key database... Done.
```

## See also

none

## serviceCfg

Manages the iSCSI application service on the switch.

### Synopsis

```
servicecfg [-e serviceBitMap] [-d serviceBitMap]
```

### Availability

admin

### Description

Use this command to enable and disable a particular service.

### Operands

This command has the following optional operands:

<code>-d <i>serviceBitMap</i></code>	Disables a service.
<code>-e <i>serviceBitMap</i></code>	Enables a service.

If no operand is specified, the command displays the current status of all application services.

### Examples

To enable the iSCSI service:

```
switch:admin> servicecfg -e iSCSI
iSCSI service is enabled.
```

### See also

none

## setFanSpeed

Sets the fan speed for all fans.

### Synopsis

```
setfanspeed [0|1]
```

### Availability

admin

### Description

Use this command to set the speed of all fans to one of two speeds. If a temperature sensor exceeds the warning threshold, this command fails because the system automatically sets the fan speed to HIGH.

### Operands

This command has the following operands:

- |   |  |
|---|--|
| 0 | Sets the speed for all fans to NORMAL. |
| 1 | Sets the speed for all fans to HIGH.   |

### Examples

To set the fan speed:

```
switch:admin> setfanspeed 1
```

```
Fan speed is set to HIGH
```

### See also

[fanShow](#)

## setPagerOff

Reverts to normal, nonpaginated screen output.

### Synopsis

setpageroff

### Availability

all users

### Description

Use this command to turn off paginated command output resulting from a previous [setPagerOn](#) command. Future command output continues without pause, even if it exceeds the area visible in one screen.

### Operands

none

### Examples

To turn pagination off:

```
switch:admin> setpageroff
```

### See also

[setPagerOn](#)



## setPagerOn

Provides paginated screen output.

### Synopsis

setpageron

### Availability

all users

### Description

Use this command to display subsequent command results one screen at a time, preventing them from exceeding the visible screen area. Press the **Spacebar** when ready to read the next screen of output.

### Operands

none

### Examples

To turn pagination on:

```
switch:admin> setpageron
```

### See also

[setPagerOff](#)

## sfpShow

Displays port SFP information.

### Synopsis

```
sfpshow [port]
```

### Availability

all users

### Description

Use this command to display a summary of all port SFP information or detailed SFP information for a specific port. When a port is not specified, `sfpShow` displays SFP information for all ports.

### Operands

This command has the following optional operand:

<i>port</i>	Displays SFP information for the specified port only.
-------------	---

### Examples

To display SFP information about port 2:

```
switch:admin> sfpshow 2
Port 2 sfp data
Identifier:  SFP
Connector:   LC
Transceiver: 100Mbps, 200Mbps, M5, M6, SWLaser(SN), Intermediate
Distance
Encoding:    8B10B
Baud Rate:   21 (units 100 megabaud)
Length 9u:   0 (units 100 meters)
Length 50u:  30 (units 10 meters)
Length 625u: 13 (units 10 meters)
Length Cu:   0 (units 1 meter)
Vendor Name: FINISAR CORP.
Vendor OUI:  00:90:65
Vendor PN:   FTRJ-8519-3-2.5
Vendor Rev:  X1
Options:     0012 Tx Disable, Loss of Signal
Enh Options: 00
BR Max:      0
BR Min:      0
Serial No:   E112CYQ
Date Code:   010120
```

To display SFP information about ports 8 through 9:

```
switch:admin> sfpshow 8-9

Port 8 sfp data
Identifier: SFP
Connector: LC
Transceiver: 100Mbps, 200Mbps, M5, M6, SWLaser(SN), Intermediate Distance
Encoding: 8B10B
Baud Rate: 21 (units 100 megabaud)
Length 9u: 0 (units 100 meters)
Length 50u: 30 (units 10 meters)
Length 625u: 13 (units 10 meters)
Length Cu: 0 (units 1 meter)
Vendor Name: FINISAR CORP.
Vendor OUI: 00:90:65
Vendor PN: FTRJ-8519-3-2.5
Vendor Rev: X1
Options: 0012 Tx Disable, Loss of Signal
Enh Options: 00
BR Max: 0
BR Min: 0
Serial No: E112CYQ
Date Code: 010120

Port 9 sfp data
Identifier: SFP
Connector: LC
Transceiver: 100Mbps, 200Mbps, M5, M6, SWLaser(SN), Intermediate Distance
Encoding: 8B10B
Baud Rate: 21 (units 100 megabaud)
Length 9u: 0 (units 100 meters)
Length 50u: 30 (units 10 meters)
Length 625u: 13 (units 10 meters)
Length Cu: 0 (units 1 meter)
Vendor Name: FINISAR CORP.
Vendor OUI: 00:90:65
Vendor PN: FTRJ-8519-3-2.5
Vendor Rev: X1
Options: 0012 Tx Disable, Loss of Signal
Enh Options: 00
BR Max: 0
BR Min: 0
Serial No: E1127M1
Date Code: 010121
```

## See also

[sfpSupport](#)

[switchShow](#)

## sfpsupport

Displays a list of supported SFPs.

### Synopsis

sfpsupport

### Availability

all users

### Description

Use this command to display a list of supported SFPs.

### Operands

none

### Examples

To display a list of supported SFPs:

```
switch:admin> sfpsupport
```

### See also

none

## showRecovery

Displays the recovery kernel version stored in bank0.

### Synopsis

showrecovery

### Availability

all users

### Description

Use this command to display the version of the recovery kernel software stored in bank0.

### Operands

none

### Examples

To display the recovery kernel version:

```
switch:admin> showrecovery
Recovery Kernel version :1.3.0.0
```

### See also

[sfpSupport](#)

Tests both the wire-side and crossbar-side port operations.

### Synopsis

```
spinsilk [-p port_list] [-n frame_count] [-l length] [-s speed] [-m mac]  
[-b loopback]
```

### Availability

admin

### Description

Use this command to test both the wire-side and crossbar-side port operation. This test generates one frame from one port and sends it to the wire. Depending on the wire-side loopback mode, this frame arrives either at the same port or at a port to which it is connected through the wire. Then the frame is forwarded to the crossbar. Depending on the crossbar-side loopback mode, the frame arrives either at the same port or at another port through the crossbar. Afterward, the frame is sent to the wire again.

Inside the wire and crossbar loop, only one frame travels at a time. The wire receiver stops forwarding the frame to the crossbar when the maximum number of frames or passes has been reached.

All ports involved in the test must be diagnostics-enabled prior to running this test.

### Operands

This command has the following optional operands:

<code>-p <i>port_list</i></code>	Specifies a list of source ports. The default value is all ports.
<code>-n <i>frame_count</i></code>	Specifies the number of frames to send to each destination. The default value is 256.
<code>-l <i>length</i></code>	Specifies the payload length of the test frames. The default value is 1024.
<code>-s <i>speed</i></code>	Specifies Fibre Channel speed mode. The default value is 2 Gb/s. 0          Autonegotiation 1          1 Gb/s 2          2 Gb/s
<code>-m <i>mac</i></code>	Specifies the MAC layer to activate. The default is Fibre Channel. 0          Fibre Channel 1          Gigabit Ethernet

`-b loopback`

Specifies the loopback mode. The default is 2 (Wire internal loop back. Crossbar back to itself). The term *partner* means a pairing of the participating ports. If an odd number of ports is involved, the last participating port will loop back to itself in crossbar. The term *chain* means that all participating ports form one single loop, including both wire side and crossbar side.

- 2 Wire internal loopback. Crossbar back to itself.
- 3 Wire internal loopback. Crossbar to its partner.
- 4 Wire internal loopback. Crossbar forms a chain.
- 5 Wire external loopback. Crossbar to itself.
- 6 Wire external loopback to itself. Crossbar forms a chain.

## Examples

To send 1024 frames from ports 12 and 13 to the wire in Fibre Channel mode and loop them back to themselves on both the wire and the crossbar sides:

```
switch:admin> spinsilk -p 12-13 -n 1024 -l 2048
spinsilk -p 12-13 -n 1024 -l 2048 -b 2 -s 2 -m 0
```

Port	Tx fr	Tx bytes	Rx fr	Rx bytes	Deli	Size	In	Out	RSLT
000C	00000401	00000020781C	00000401	00000020781C	0000	0000	0000	0000	PASS
000D	00000401	00000020781C	00000401	00000020781C	0000	0000	0000	0000	PASS

To send 1024 frames from ports 12 and 13 to the wire in Ethernet mode and loop them back to themselves on both the wire and crossbar sides:

```
switch:admin> spinsilk -p 12-13 -n 1024 -l 1024 -m 1
spinsilk -p 12-13 -n 1024 -l 1024 -b 2 -s 2 -m 1
```

Port	Tx fr	Tx bytes	Rx fr	Rx bytes	CrcT	CrcR	BadT	BadR	RSLT
000C	00000401	000000104C12	00000401	000000104C12	0000	0000	0000	0000	PASS
000D	00000401	000000104C12	00000401	000000104C12	0000	0000	0000	0000	PASS

## See also

[crossPortTest](#)

[portDiagDisable](#)

[portDiagEnable](#)

[portLoopbackTest](#)

## supportShow

Runs the CLI scripts for debugging.

### Synopsis

supportshow

### Availability

admin

### Description

Use this command to run CLI scripts, which are generally used for debugging. Commands include the following:

<a href="#">chassisShow</a>	<a href="#">fcrProxyDevShow</a>	<a href="#">portCfgShow</a>
<a href="#">cfgActvShow -d</a>	<a href="#">fcrResourceShow</a>	<a href="#">portLogDump</a>
<a href="#">cfgShow</a>	<a href="#">fcrRouteShow</a>	<a href="#">portRouteInfo</a>
<a href="#">configShow</a>	<a href="#">fcrXlateConfig</a>	<a href="#">portShow 0-15</a>
<a href="#">date</a>	<a href="#">figeroShow</a>	<a href="#">portStatsShow 0-15</a>
<a href="#">du</a>	<a href="#">fspfShow</a>	<a href="#">ps-axl</a>
<a href="#">dlsShow</a>	<a href="#">ifConfig -a</a>	<a href="#">psShow</a>
<a href="#">errShow -a</a>	<a href="#">interfaceShow</a>	<a href="#">routeShow</a>
<a href="#">eventShow</a>	<a href="#">iodShow</a>	<a href="#">sfpShow</a>
<a href="#">eventShowByNum 1 -1 -a</a>	<a href="#">ipaddrShow</a>	<a href="#">shpShow 1-15</a>
<a href="#">fabLogShow</a>	<a href="#">licenseShow</a>	<a href="#">slotShow</a>
<a href="#">fabricShow</a>	<a href="#">lsanZoneShow</a>	<a href="#">switchShow</a>
<a href="#">fazoneAdd</a>	<a href="#">lsdbShow</a>	<a href="#">tempShow</a>
<a href="#">fcipShow 0-15</a>	<a href="#">nbrStateShow</a>	<a href="#">top -d 1</a>
<a href="#">fcrDbgDevShow</a>	<a href="#">nsAllShow -v</a>	<a href="#">topologyShow</a>
<a href="#">fcrFabricShow</a>	<a href="#">nslogShow</a>	<a href="#">uname</a>
<a href="#">fcrLogShow</a>	<a href="#">nsShow</a>	<a href="#">upTime</a>
<a href="#">fcrPhyDevShow</a>	<a href="#">portCfgEXPort 0-15</a>	<a href="#">urouteShow</a>
<a href="#">fcrProxyConfig</a>	<a href="#">portCfgFcip \$I</a>	<a href="#">zslogShow</a>

The output from the scripts is displayed on the screen. The display can also be saved in a file with an extension of `.log` or `.txt`.

### Examples

To display the output on the screen:

```
switch:admin> supportshow
```

To save the output to a log file:

```
switch:admin> supportshow > logfile.txt
```

### See also

[diagUpload](#)



## svipAddrSet

Sets the virtual management IP configuration of the MP Router.

### Synopsis

```
svipaddrset -i ipAddress -n netMask -a action
```

### Availability

admin

### Description

Use this command to set the virtual management IP configuration. The virtual management IP address is used as the single identity of the MP Router.

*Configuration scenario I:* If the secondary management interface is not used, the virtual management IP configuration is set the same as the primary IP configuration by default.

*Configuration scenario II:* If both management interfaces are configured in the same subnet, the virtual management IP configuration must be configured within the same subnet.



**NOTE:** The virtual management IP configuration is set to the same value as the primary IP configuration by default. It also can be changed using [ipaddrSet](#) -s.

### Operands

The following operands are required:

-i <i>ipAddress</i>	Sets the IP address in the standard aa.bb.cc.dd format.
-n <i>netMask</i>	Sets the netmask in the standard aa.bb.cc.dd format.
-a <i>action</i>	Specifies whether the change takes effect immediately (cfgnow) or after next reboot (cfgafterreboot).

### Examples

To set virtual management IP address 192.168.10.1 and netmask 255.255.255.0:

```
switch:admin> svipaddrset -i 192.168.10.1 -n 255.255.255.0 -a cfgnow
```

### See also

[ipaddrSet](#)

[ipaddrShow](#)

[svipAddrShow](#)

## svipAddrShow

Displays the virtual management IP configuration of the MP Router.

### Synopsis

svipaddrshow

### Availability

all users

### Description

Use this command to display the virtual management IP configuration of the MP Router.

### Operands

none

### Examples

To display the virtual management IP configuration of the MP Router:

```
switch:admin> svipaddrshow

The switch virtual IP configuration current
IP address            10.33.58.20  10.33.58.20
Netmask               255.255.224.0 255.255.224.0
Gateway               -      10.33.48.1
```

### See also

[svipAddrSet](#)

## switchDisable

Disables the whole MP Router.

### Synopsis

```
switchdisable [-f]
```

### Availability

admin

### Description

Use this command to disable an MP Router and all its ports. No ports can be individually enabled by the [portEnable](#) command until the MP Router itself is enabled.

If a `switchDisable` command is in progress, you cannot issue another `switchDisable` or [switchEnable](#) command. If the previously issued command never completes, use the `-f` operand. The MP Router ignores the state of the previously issued command and attempts to perform the operation as well as possible.

### Operands

The following operand is optional:

`-f` Forces the MP Router to be disabled.

### Examples

To disable the MP Router:

```
switch:admin> switchdisable
switch is being disabled.....
Switchdisabled
```

### See also

[configure](#)

[switchEnable](#)

[switchShow](#)

## switchEnable

Enables the whole MP Router.

### Synopsis

```
switchenable [-f]
```

### Availability

admin

### Description

Use this command to allow ports to be enabled. If an MP Router is disabled, all its ports are disabled. However, if an MP Router is enabled, any individual port can still be disabled by a [portDisable](#) command.

If a `switchEnable` command is in progress, you cannot issue a [switchDisable](#) command or another `switchEnable` command. If the previously issued command never completes, use the `-f` operand. The MP Router ignores the state of the previously issued command and attempts to perform the operation as well as possible.

### Operands

The following operand is optional:

`-f` Forces the MP Router to be enabled.

### Examples

To enable the MP Router:

```
switch:admin> switchenable  
Switch Enabled
```

### See also

[configure](#)

[switchDisable](#)

[switchShow](#)

## switchName

Displays and sets the MP Router name.

### Synopsis

switchname [*switch-name*]

### Availability

admin

### Description

Use this command to display and set the MP Router name. If you enter the command without an operand, the MP Router name is displayed. The MP Router name is displayed also in the user interface prompt.

The MP Router name is a maximum of 19 characters, including letters, digits, underscores, and spaces; it must start with either a letter or a digit.

### Operands

The following operand is optional:

*switch-name*          Sets the MP Router name.

### Examples

To display the MP Router name:

```
switch:admin> switchname
```

To set the MP Router name:

```
switch:admin> switchname newswitchname  
newswitchname:admin>
```

### See also

[switchShow](#)

## switchShow

Displays MP Router and port status.

### Synopsis

switchshow

### Availability

all users

### Description

Use this command to display MP Router and port status information. This command displays the following fields:

Switch Name	The symbolic name
Switch State	The MP Router state: <code>online</code> or <code>offline</code>
Switch Type	The MP Router model and revision numbers
Switch Role	The MP Router role: <code>principal</code> or <code>subordinate</code>
Switch Domain	The MP Router Domain ID: 1 to 239
Switch ID	The MP Router embedded port D_ID
Switch WWN	The MP Router world wide name
beacon status	The MP Router beacon status
zoning	The MP Router zoning status
MP Router BB Fabric ID	The backbone fabric ID for FC routing

The MP Router summary is followed by one line per port, as follows:

Port	The port number	
Media	--	No module present
	id	Serial ID
Speed	1G	1 Gb/s
	2G	2 Gb/s
	N1	1 Gb/s negotiation
	N2	2 Gb/s negotiation
	AN	Autonegotiation
State	No_Module	No module present (SFP or other)
	No_Light	The module is not receiving light
	Online	The port is up and running
Info	The Info field can be blank or display the following:	
	E_Port	Fabric port
	F_Port	Point-to-point
	FL_Port	Loop port
	EX_Port	EX_Port
	VE_Port	FCIP port
	disabled	Port is disabled
	loopback	Port is in loopback mode

stopped	Post is stopped
invalid sfp	SFP module is not supported
diagnostic	Port is in diagnostic mode

The Info field also might display error information associated with the port, for example:

```
Last error Exceeded max number of zone resources.
```

This error implies that the zoning information has exceeded the switch resources. The maximum number of devices is 10,000 and the maximum number of zone groups is 3,000. The [eventShow](#) command provides more details about the error.

## Operands

none

## Examples

To display the MP Router and port status:

```
switch:admin> switchshow
Switch Name   : switch
Switch State  : Online
Switch Type   : 38.0
Switch Role   : Subordinate
Switch Domain : 103
Switch ID     : FFFC67
Switch WWN    : 10:00:00:05:1e:12:e7:00
beacon status: OFF
zoning        : ON (zs1)

FC router BB Fabric ID: 1

Port  Media  Speed  State      Info
=====
0     id     AN     No_Light
1     id     AN     No_Light
2     id     AN     Online
3     id     N2     Online     EX_PORT 10:00:00:60:69:90:10:ba "switch2" (fabric id = 2)
4     id     N2     Online     E_PORT 10:00:00:60:69:90:10:dc "tombrocade11" (upstream)
5     id     AN     No_Light   Disabled
6     id     AN     Online
7     --     AN     No_Module
8     id     N1     Online     VE_PORT 10:00:00:05:1e:12:fa:00 "tomars4" (downstream)
9     id     AN     No_Light   Disabled
10    id     AN     No_Light
11    id     N2     Online     F_PORT 10:00:00:00:c9:33:3e:3f
12    id     AN     No_Light
13    id     2G     No_Light
14    id     AN     No_Light
15    id     N1     Online     L_PORT 7 public
```

## See also

- `configShow`
- `configure`
- `eventShow`
- `switchDisable`
- `switchEnable`
- `switchName`



## switchStatusShow

Displays the overall status of the MP Router.

### Synopsis

switchstatusshow

### Availability

all users

### Description

Use this command to display the overall status of the MP Router, as determined by the overall status of the power supply, fan, and temperature sensors. If any of them is in critical status, overall MP Router status is critical; if none of them is in critical status but one or more is in marginal status, the overall MP Router status is marginal. Otherwise, overall MP Router status is healthy.

If the MP Router is disabled, the overall MP Router status is marginal.

### Operands

none

### Examples

To display the overall status of the MP Router:

```
switch:admin> switchstatusshow
Switch overall status: Marginal
Reason:

    power supply is in MARGINAL state

Power overall status: Marginal
Fan overall status: Healthy
Temp overall status: Healthy
```

### See also

[fanShow](#)

[psShow](#)

[tempShow](#)

## syslogdipAdd

Adds the IP address of a syslog daemon.

### Synopsis

```
syslogdipadd "ipAddress"
```

### Availability

admin

### Description

The syslog daemon (syslogd) is a process available on most UNIX® systems that reads and forwards system messages to the appropriate log files and/or users, depending on the system configuration. This command adds the IP address of a syslog daemon, that is, the IP address of the server that is running the syslogd process. When one or more IP addresses are configured, the MP Router forwards all error-log entries (see [errShow](#)) to the syslogd on all the specified servers. Up to six servers are supported.

### Operands

This command has the following required operand:

<i>"ipAddress"</i>	IP address of the syslog daemon (the server that is running the syslogd process).
--------------------	---

### Examples

To add the address 192.168.1.60 to the list of machines to which system messages are sent:

```
switch:admin> syslogdipaddr "192.168.1.60"  
syslog.IP.address 192.168.1.60 is added
```

### See also

[syslogdipRemove](#)

[syslogdipShow](#)

## syslogdipRemove

Removes the IP address of a syslog daemon.

### Synopsis

```
syslogdipremove "ipAddress"
```

### Availability

admin

### Description

Use this command to remove the IP address of a syslog daemon (the server that is running the syslogd process).

### Operands

This command has the following required operand:

<i>"ipAddress"</i>	IP address of the syslog daemon (the server that is running the syslogdd process).
--------------------	--

### Examples

To remove the address 192.168.1.60 from the list of machines to which system messages are sent:

```
switch:admin> syslogdipremove "192.168.1.60"
syslog.IP.address 192.168.1.60 is removed
```

### See also

[syslogdipAdd](#)

[syslogdipShow](#)

## syslogdipShow

Displays all the syslog daemon IP addresses.

### Synopsis

```
syslogdipshow
```

### Availability

all users

### Description

Use this command to display all the syslog daemon IP addresses in the configuration database.

### Operands

none

### Examples

To display all the syslog daemon IP addresses:

```
switch:admin> syslogdipshow
syslog.IP.address.1:    192.168.1.60
syslog.IP.address.2:    192.168.1.88
syslog.IP.address.3:    192.168.2.77
```

### See also

[syslogdipAdd](#)

[syslogdipRemove](#)

## tempShow

Displays temperature sensor readings.

### Synopsis

tempshow

### Availability

all users

### Description

Use this command to display all temperature sensor readings. The number of sensors might vary among different platforms. Every sensor is indexed by a sequential number. The status of the sensor can be OK or Marginal. Both Centigrade and Fahrenheit readings are displayed.

### Operands

none

### Examples

To display all temperature sensor readings:

```
switch:admin> tempshow
```

Index	Status	Centigrade	Fahrenheit
1	OK	32	90
2	OK	34	93
3	OK	40	104
4	OK	34	93
5	OK	37	99

### See also

[fanShow](#)

[psShow](#)

## timeout

Displays or sets the IDLE timeout value for a login session.

### Synopsis

```
timeout [timeVal]
```

### Availability

admin

### Description

Use this command without an operand to display the current IDLE timeout for the login session.

### Operands

This command has the following optional operand:

<i>timeVal</i>	Sets the IDLE timeout value to number of minutes. Using a timeout value of 0 disables the timeout functionality; login sessions would never be disconnected. The maximum value that can be specified is 99,999; the default is 10 minutes.
----------------	--

### Examples

To set the idle timeout to 10 minutes:

```
switch:admin> timeout 10  
  
IDLE Timeout Changed to 10 minutes  
The modified IDLE Timeout will be in effect after NEXT login.
```

### See also

none

## timeZoneSet

Sets the local time zone for the MP Router.

### Synopsis

timezoneset

### Availability

admin

### Description

Use this command to set the local time zone for the MP Router.

### Operands

none

### Examples

To set the local time zone to US/Pacific:

```
switch:admin> timezoneset

Please select a continent or ocean
1). Africa          2). America          3). Antarctica       4). Arctic Ocean
5). Asia            6). Atlantic Ocean   7). Australia        8). Europe
9). Indian Ocean    10). Pacific Ocean   11). US              12). Canada
Enter the option #: 11
Please select a country or city
1). Alaska          2). Aleutian          3). Arizona          4). Central
5). East-Indiana    6). Eastern           7). Hawaii           8). Indiana-Starke
9). Michigan        10). Mountain         11). Pacific         12). Pacific-New
13). Samoa
Enter the option #: 11
time zone is set
```

### See also

[date](#)

## top

Displays and updates information about the top CPU processes.

### Synopsis

```
top [-SbiInquv] [-d count] [-s time] [-o field] [-U user] [number]
```

### Description

Use this command to display the top 10 processes on the system and periodically update this information. If standard output is on an intelligent terminal (see below), then as many processes as will fit on the terminal screen are displayed by default; otherwise, approximately 20 are displayed. Raw CPU percentage is used to rank the processes. If *number* is given, then the top *number* processes are displayed instead.

This command distinguishes between terminals that support advanced capabilities and those that do not. This distinction affects the choice of defaults for certain options. In the remainder of this document, an *intelligent* terminal is one that supports cursor addressing, clear screen, and clear to end of line. Conversely, a *dumb* terminal is one that does not support such features. If the output of the `top` command is redirected to a file, the command acts as if it were being run on a dumb terminal.

### Operands

This command has the following optional operands:

- |                 |  |
|-----------------|--|
| -S              | Toggles display of system processes. Normally, system processes such as the pager and the swapper are shown.   |
| -b              | Uses <i>batch</i> mode. In this mode, all input from the terminal is ignored. Interrupt characters (such as ^C and ^e) still have an effect. This is the default on a dumb terminal or when the output is not on a terminal.   |
| -i              | Uses <i>interactive</i> mode. In this mode, any input is immediately read for processing. See the section, " <a href="#">Interactive mode</a> " on page 249 for an explanation of which keys perform what functions. After the command is processed, the screen is immediately updated, even if the command was not understood. This mode is the default when standard output is on an intelligent terminal. |
| -I              | Does not display idle processes. By default, the <code>top</code> command displays both active and idle processes.   |
| -n              | Uses <i>noninteractive</i> mode. This is identical to <i>batch</i> mode.   |
| -q              | Changes the priority of <code>top</code> to -20 so that it will run faster. This can be used when the system is being very sluggish, to help discover the problem. This option can be used only by the root user.  |
| -u              | Does not map UID numbers to user names. Normally, <code>top</code> reads as much of the file <code>/etc/passwd</code> as is necessary to map all of the user ID numbers it encounters to login names. This option disables all that, while possibly decreasing execution time. The UID numbers are displayed instead of the names.   |
| -v              | Writes version number information to <code>stderr</code> and then exits immediately. No other processing takes place when this option is used. To see current revision information while <code>top</code> is running, use the help command (?).  |
| -d <i>count</i> | Shows only <i>count</i> displays and then exits. A display is considered to be one update of the screen. This option allows users to select the number of displays they want to see before <code>top</code> automatically exits. For intelligent terminals, no upper limit is set. The default is 1 for dumb terminals.  |



<code>-s time</code>	Sets the delay between screen updates to <i>time</i> seconds. The default delay between updates is <i>nD</i> seconds.
<code>-o field</code>	Sorts the process display area on the specified field. The field name is the name of the column as seen in the output, but in lowercase letters. Likely values are <i>cpu</i> , <i>size</i> , <i>res</i> , and <i>time</i> , but this might vary on different operating systems. Note that not all operating systems support this option.
<code>-U user</code>	Shows only those processes owned by <i>user</i> name. This option currently accepts only user names and will not understand UID numbers.
<i>number</i>	Sets the number of top processes to be displayed.

Both the *count* and *number* operands can be specified as *infinite*, indicating that they can stretch as far as possible. This is accomplished by using any proper prefix of the keywords *infinity*, *maximum*, or *all*. The default for *count* on an intelligent terminal is *infinity*.

The environment variable `TOP` is examined for options before the command line is scanned. This enables users to set their own defaults. The number of processes to display can also be specified in the environment variable `TOP`. The operands `-I`, `-S`, and `-u` are actually toggles. A second specification of any of these operands negates the first. Thus, a user who has the environment variable `TOP` set to `-I` can use the command `top -I` to display idle processes.

### Interactive mode

When `top` is running in interactive mode, it reads commands from the terminal and acts upon them accordingly. In this mode, the terminal is put in `CBREAK`; a character is processed as soon as it is typed. Almost always, a key is pressed when `top` is between displays, that is, while it is waiting for *time* seconds to elapse. If this is the case, the command is processed and the display is updated immediately thereafter (reflecting any changes that the command might have specified). This happens even if the command was incorrect.

If a key is pressed while `top` is updating the display, `top` finishes the update and then processes the command. Some commands require additional information, and the user is prompted accordingly. While typing this information, the user's **erase** and **kill** keys (as set up by the command `stty`) are recognized; a **newline** character terminates the input.

These commands are currently recognized (`^L` refers to `Ctrl-L`):

<code>^L</code>	Redraws the screen.
<code>fBh</code> or <code>?</code>	Displays a summary of the commands (help screen). Version information is included in this display.
<code>q</code>	Quits <code>top</code> .
<code>d</code>	Changes the number of displays to show (prompts for new number). Remember that the next display counts as one, so typing <code>d1</code> makes <code>top</code> show one final display and then immediately exit.
<code>n</code> or <code>#</code>	Changes the number of processes to display (prompts for new number).
<code>s</code>	Changes the number of seconds to delay between displays (prompts for new number).
<code>S</code>	Toggles between showing and not showing system processes.
<code>k</code>	Sends a signal ( <i>kill</i> by default) to a list of processes. This acts similarly to the command <code>kill</code> .
<code>r</code>	Changes the priority (the <i>nice</i> ) of a list of processes. This acts similarly to the command <code>renice</code> .

u	Displays only processes owned by a specific user name (prompts for user name). If the user name specified is simply +, processes belonging to all users are displayed.
o	Changes the order in which the display is sorted. This command is not available on all systems. The sort key names vary from system to system but usually include <code>cpu</code> , <code>res</code> , <code>size</code> , and <code>time</code> . The default is <code>cpu</code> .
e	Displays a list of system errors (if any) generated by the last <code>kill</code> or <code>renice</code> command.
i or I	Toggles the display of idle processes.

## Display

The actual display varies, depending on the specific variant of UNIX that the machine is running.

The first few lines of the display show general information about the state of the system, including the last process ID assigned to a process (on most systems), the three load averages, the current time, the number of existing processes, the number of processes in each state (`sleeping`, `running`, `starting`, `zombies`, and `stopped`), and a percentage of time spent in each of the processor states (`user`, `nice`, `system`, and `idle`). It also includes information about physical and virtual memory allocation.

The remainder of the screen displays information about individual processes. This display is similar to the output for `portStop`, but it is not exactly the same.

PID	Process ID.
USERNAME	Name of the process owner (if <code>-u</code> is specified, a <code>UID</code> column is substituted for <code>USERNAME</code> ).
PRI	Current priority of the process.
NICE	Nice amount (in the range <code>-20</code> to <code>20</code> ).
SIZE	Total size of the process (text, data, and stack).
RES	Current amount of resident memory (both <code>SIZE</code> and <code>RES</code> are given in kilobytes).
STATE	Current state (one of <code>START</code> , <code>RUN</code> , <code>STOP</code> , <code>ZOMB</code> , <code>DEAD</code> , or <code>CPU</code> ) or wait channel if the state is <code>SLEEP</code> .
TIME	Number of system and user CPU seconds that the process has used.
WCPU	When displayed, the weighted CPU percentage (this is the same value that <code>portStop</code> displays as <code>CPU</code> ).
CPU	Raw percentage and is the field that is sorted to determine the order of the processes.
COMMAND	Name of the command that the process is currently running (if the process is swapped out, this column is marked <code>&lt;swapped&gt;</code> ).

On multiprocessor systems, the `STATE` field might be followed by a slash and CPU number.

## Examples

none

## See also

none

## topologyShow

Displays the unicast fabric topology.

### Synopsis

```
topologyshow [domain_number]
```

### Availability

all users

### Description

Use this command to display fabric topology as seen by the local MP Router. The fabric topology consists of a list of all domains that are part of the fabric and, for each of those domains, all the possible paths to reach the domain from the local MP Router.

A path is defined by the output port that a frame, which has been addressed to a certain domain, is forwarded to by the MP Router routing hardware.

In addition, this command displays the following for each path: its cost, the number of hops from the local MP Router to the destination switch, and the summary of all ports routed through that path.

Local Domain ID	The domain number of the local MP Router.
Domain	The domain number of the destination switch.
Metric	The cost of reaching the destination domain.
Hops	The maximum number of hops required to reach the destination domain.
Out Port	The port to which an incoming frame will be forwarded, in order to reach the destination domain.
Name	Switch name of the destination switch.

### Operands

The following operand is optional:

<i>domain_number</i>	The destination domain whose topology information is to be displayed.
----------------------	---

### Examples

To display the unicast fabric topology:

```
switch:admin> topologyshow
13 domains in the fabric; Local Domain ID: 50

Domain    Metric    Hops Out    Port    Name
-----
   54      1000      2         0      "brcd_3200_57_54"
              1
              4
              5
              6
   58       500      1        12      "AP_57_58"
              13
              14

(continued on next page)
```

70	500	1	4	"brcd_3800_57_70"
			5	
			6	
71	500	1	11	"brcd_3800_32_71"
73	500	1	0	"brcd_12k1_57_73"
		1		
76	1000	2	0	"brcd_3200_57_76"
			1	
			4	
			5	
			6	
78	1500	3	4	"brcd_3900_57_78"
			5	
			6	
79	1500	3	4	"brcd_3900_57_79"
			5	
			6	
80	1500	3	4	"brcd_38_57_80"
			5	
			6	
81	1500	3	4	"brcd_38_57_81"
			5	
			6	
100	1000	2	4	"AP_57_75"
			5	
			6	
116	1000	2	0	"brcd_3900_116"
			1	
			12	
			13	
			14	

## See also

[portRouteInfo](#)

[urouteShow](#)

## trunkReset

Turns off trunking.

### Synopsis

trunkreset

### Availability

admin

### Description

Use this command to turn off trunking.

### Operands

none

### Examples

To turn off trunking:

```
switch:admin> trunkreset  
Trunk Feature Disabled
```

### See also

[dlsSet](#)

[dlsShow](#)

[iodReset](#)

[iodSet](#)

[iodShow](#)

[trunkSet](#)

[trunkShow](#)

## trunkSet

Turns on trunking.

### Synopsis

trunkset

### Availability

admin

### Description

Use this command to allow dynamic exchange-level trunking across all available E\_Port links to reach the next hop. If trunking is enabled, all E\_Ports to a given next hop domain are automatically added to the trunk route. Each trunk route can have a maximum of 16 E\_Ports.

With trunking enabled, for each frame received at the port, the exit port to use to route the frame is selected based on:

$$((dest\_id + src\_id + ox\_id) \% num\_routes\_in\_trunk)$$

Trunking is turned off by default. To turn on trunking, enter the `trunkset` command after installing the XPath Exchange-Based Trunking license. Trunking overrides the dynamic load sharing setting ([dlsSet](#)).

### Operands

none

### Examples

To turn on trunking:

```
switch:admin> trunkset
Trunk Feature enabled
```

### See also

[dlsReset](#)

[dlsSet](#)

[dlsShow](#)

[iodReset](#)

[iodSet](#)

[iodShow](#)

[licenseShow](#)

[nbrStateShow](#)

[topologyShow](#)

[trunkReset](#)

[trunkShow](#)

[urouteShow](#)

## trunkShow

Displays the trunk setting.

### Synopsis

trunkshow

### Availability

all users

### Description

Use this command to see whether trunking is on (set) or off.

### Operands

none

### Examples

To display the trunk setting:

```
switch:admin> trunkshow  
Trunking is set
```

### See also

[dlsReset](#)

[dlsSet](#)

[dlsShow](#)

[iodReset](#)

[iodSet](#)

[iodShow](#)

[trunkReset](#)

[trunkSet](#)

## tsClockServer

Displays or sets the network time synchronization (NTP) server address.

### Synopsis

```
tsclockserver [ipaddr]
```

### Availability

admin

### Description

This command displays or sets the NTP server address. It synchronizes the local time of the MP Router to an external NTP server. If no operand is specified, the current value is displayed.

### Operands

This command has the following optional operand:

*ipaddr*

Specifies the IP address of the NTP server. This option enables the MP Router to synchronize with the specified external NTP server. The NTP server should be accessible from the MP Router.

The default *ipaddr* value is LOCL. When a clock server IP address other than LOCL is specified, the [date](#) command will be restricted to display mode only.

### Examples

To set the NTP server to the specified IP address:

```
switch:admin> tsclockserver 192.168.126.60
tsclockserver is set
```

To disable the NTP service:

```
switch:admin> tsclockserver LOCL
tsclockserver is set
```

### See also

[date](#)



## upTime

Displays how long the system has been running.

### Synopsis

`uptime`

### Availability

admin

### Description

Use this command to display the current time, the length of time the system has been up, the number of users, and the load average of the system over the last 1, 5, and 15 minutes.

### Operands

none

### Examples

none

### See also

none

## urouteConfig

Configures a static route.

### Synopsis

```
urouteconfig in-port domain out-port
```

### Availability

admin

### Description

Fibre Channel Shortest Path First (FSPF) allows load sharing of traffic across multiple equal-cost, equivalent paths. The assignment of routes to individual equivalent paths is done automatically. This assignment is not deterministic; it might be different after a reboot or a fabric topology change. This command allows the configuration of static routes. A static route is a route that is assigned to a specific path that does not change when a topology change occurs unless the path used by the route becomes unavailable.

After this command is entered, if *output-port* is a usable port, all frames coming in from port *in-port* addressed to *domain* are forwarded through port *out-port*.

If *out-port* is not usable, the routing assignment is not affected by this command. When *out-port* becomes usable, however, the static route assignment for *in-port* is enforced.

*out-port* is usable if it is on a minimum-cost path to the destination domain.

*in-port* can be either an F\_Port or an E\_Port.

### Notes

When using static routes, load sharing might be affected. The MP Router attempts to achieve the best load sharing, but if too many routes are statically configured to use the same output port, equal load-sharing might not be possible.

To prevent routing loops, static route configuration through a non-minimum-cost path is not allowed. If a user attempts to configure such a route, the user is queried as to whether or not the entry should be saved in the database.

### Operands

The following operands are required:

<i>in-port</i>	The input port to be configured with the static route.
<i>domain</i>	The destination domain.
<i>out-port</i>	The output port to which traffic is forwarded.

### Examples

To configure a static route:

```
switch:admin> urouteconfig 3 71 1
Committing configuration...done
```

## See also

[configShow](#)

[portRouteInfo](#)

[urouteRemove](#)

[urouteShow](#)

## urouteRemove

Removes a static route.

### Synopsis

```
urouteremove in-port domain
```

### Availability

admin

### Description

Use this command to remove a previously configured static route.

After this command is entered, the route to *domain* for *in-port* might or might not change. It will change if the previous static route was not along a minimum-cost path.

After this command is entered, the load sharing to *domain* is reevaluated.

### Operands

This command has the following required operands:

<i>in-port</i>	The port to be statically routed.
<i>domain</i>	The destination domain.

### Examples

To remove a static route:

```
switch:admin> urouteremove 3 71
Committing configuration...done
```

### See also

[configShow](#)

[portRouteInfo](#)

[urouteConfig](#)

[urouteShow](#)

## urouteShow

Displays unicast routing information.

### Synopsis

```
urouteshow [in-port [domain]]
```

### Availability

all users

### Description

Use this command to display the unicast routing information for a port as it is known by the Fibre Channel Shortest Path First (FSPF) path selection/routing task. The routing information describes how a frame that is received from a port on the local MP Router is routed to reach a destination switch.

The command displays the routing information for all the active ports on the local MP Router to all the domains in the fabric.

The following fields are displayed:

Local Domain ID	The domain number of the local MP Router.
In-Port	The port from which a frame comes.
Domain	The destination domain of the incoming frame.
Out-Port	The port to which an incoming frame is forwarded to reach the destination domain.
Metric	The cost of reaching the destination domain.
Hops	The maximum number of hops required to reach the destination domain.
Flags	Whether this route is dynamic (D) or static (S). A dynamic route is discovered automatically by the FSPF path-selection protocol. A static route is assigned using the <a href="#">urouteConfig</a> command.
Next (Dom, Port)	Domain and port number of the next hop. These are the domain number and the port number of the switch to which Out-Port is connected.

The information provided by this command should match what is provided by [portRouteInfo](#) and [topologyShow](#).

### Operands

This command has the following optional operands:

<i>in-port</i>	Displays the routing information for the port from which a frame comes to all domains in the fabric.
<i>in-port domain</i>	Displays the routing information for the port from which a frame comes to the destination domain.

## Examples

To display unicast routing information:

```
switch:admin> urouteshow
Local Domain ID: 50
In-Port      Domain      Out-Port      Metric      Hops      Flags      Next (Dom,Port)
8            54           11            1500         3          D          71,1
              58           11            1000         2          D          71,1
              70           11            3000         6          D          71,1
              71           11            500          1          D          71,1
              73           11            2000         4          D          71,1
              76           11            2500         5          D          71,1
11           54           11            1500         3          D          71,1
              58           11            1000         2          D          71,1
              70           11            3000         6          D          71,1
              71           11            500          1          D          71,1
              73           11            2000         4          D          71,1
              76           11            2500         5          D          71,1
```

## See also

[portRouteInfo](#)

[topologyShow](#)

[urouteConfig](#)

[urouteRemove](#)

## userAdd

Adds a new user to the MP Router.

### Synopsis

```
useradd -u userName -g userGroup
```

### Availability

admin

### Description

Use this command to add a new user to the MP Router. There are two permanent user accounts (or groups) to which you can assign a user: admin and user. Each account has a default password of `password`.

### Operands

The following operands are required:

<code>-u <i>userName</i></code>	Specifies the new user name.
<code>-g <i>userGroup</i></code>	Specifies the group for the new user.

### Examples

To add a new user (John) with an admin account, after logging in as admin:

```
switch:admin> useradd -u john -g admin
```

To add a new user (Mike) with a user account, after logging in as admin:

```
switch:admin> useradd -u mike -g user
```

### See also

[passwd](#)

[userDel](#)

[userShow](#)

## userDel

Removes a user from the MP Router.

### Synopsis

```
userdel userName
```

### Availability

admin

### Description

Use this command to remove a user from the MP Router; however, the admin and user (permanent) accounts cannot be deleted. Furthermore, users logged in as admin can delete all users except themselves.

### Operands

The following operand is required:

<i>userName</i>	Name of user to be removed.
-----------------	-----------------------------

### Examples

To remove a user (John) from the MP Router after logging in as admin:

```
switch:admin> userdel john
```

### See also

[passwd](#)

[userAdd](#)

[userShow](#)



## users

Lists current users.

### Synopsis

users

### Description

Use this command to list (sorted, separated by spaces, and on one line) the login names of the users currently on the system.

### Operands

none

### Examples

none

### See also

none

## userShow

Displays a list of available users on the MP Router.

### Synopsis

usershow

### Availability

all users

### Description

Use this command to display a list of available users on the MP Router.

### Operands

none

### Examples

To display all users available on the MP Router, after logging in as admin:

```
switch:admin> usershow

  userName with admin role
  -----
  admin
  admin123

  userName with user role
  -----
  user
  user123
```

### See also

[passwd](#)

[userAdd](#)

[userDel](#)

## version

Displays the version numbers for MP Router software components.

### Synopsis

`version`

### Availability

all users

### Description

Use this command to display the version numbers of the MP Router software components.

### Operands

none

### Examples

To display the version numbers of all software components in a switch:

```
switch:admin> version
=====
Installed Packages:
=====
Package Name:      xpath_os_v7.4.0_prealpha1_bld17
Install Date:      Apr 14, 2005 18:48
```

### See also

[altBoot](#)

[firmwareCommit](#)

[firmwareDownload](#)

[firmwareShow](#)

## wdogevt

Displays the watchdog events.

### Synopsis

wdogevt

### Availability

admin

### Description

Use this command to display watchdog events logged in system NVRAM.

### Operands

none

### Examples

To display the watchdog events:

```
switch:admin> wdogevt

wdogevt: last shutdown due to watchdog timeout
wdogevt: last known timeout recorded at UTC Tue
        Dec 16 15:39:40 2003

debug trace:

sp: 8ad75c70 lr: 11833e98
sp: 8ad75ca0 lr: 00034d20
sp: 8ad75cb0 lr: 000ff0ec
sp: 8ad75ce0 lr: 00005758
sp: 8ad75d10 lr: 00005428
sp: 8ad75d20 lr: 00005a08
sp: 8ad75d40 lr: 000c01b8
sp: 8ad75d80 lr: 000b9d08
sp: 8ad75e20 lr: 000b9630
sp: 8ad75ee0 lr: 00091354
sp: 8ad75f40 lr: 000e70c0
sp: fffffe730 lr: 00003f44
sp: 00000000 lr: 00000000
```



**NOTE:** There are no debug traces for administrator actions or power failures. The debug trace indicates the problem area within the operating system and is likely different from the example shown here.

All system events are available in the system log.

### See also

none

## zoneAdd

Adds a member to a zone.

### Synopsis

```
zoneadd "zoneName", "zoneMemberList"
```

### Availability

admin

### Description

Use this command to add one or more members to the existing zone. For a description of members, see the [zoneCreate](#) help.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

*"zoneName"*

The name of a zone, in quotation marks.

*"zoneMemberList"*

A semicolon-separated list of one or more world wide names, domain,port pairs, zone alias names, and IQNs in quotation marks.

### Examples

To add some disk arrays to ZONE\_A:

```
switch:admin> zoneadd "ZONE_A", "20:00:00:e0:8b:01:8f:85; 100,1;  
ALIAS1"
```

### See also

[zoneCreate](#)

[zoneDelete](#)

[zoneRemove](#)

[zoneShow](#)

## zoneCreate

Creates a zone.

### Synopsis

```
zonecreate "zoneName", "zoneMemberList"
```

### Availability

admin

### Description

Use this command to create a new zone.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across MP Router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

*"zoneName"*

A unique name for a zone, in quotation marks. A zone name begins with a letter followed by any number of letters, digits, and underscore characters. Names are case sensitive; for example, "Zone\_1" and zone\_1 are different zones. Spaces are ignored.

*"zoneMemberList"*

A semicolon-separated list of one or more World Wide Names, domain,port pairs, zone alias names, and iSCSI qualified names (IQNs), in quotation marks. Requirements for the *zoneMemberList* are as follows:

- World wide names—These names must be specified as eight hexadecimal numbers separated by colons, for example, 10:00:00:60:69:00:00:8a. Zoning has no knowledge of the fields within a WWN; the 8 bytes are simply compared with the node and port names presented by a device in a login frame (FLOGI or PLOGI). When a zone member is specified by node name, then all ports on that device are in the zone; when a zone member is specified by port name, only that single device port is in the zone.
- Domain,port pairs—Physical fabric port numbers can be specified as a pair of decimal numbers *d*, *p* where *d* is the MP Router number (domain ID) and *p* is the port number on that MP Router. For example, 6,10 specifies port 10 on MP Router 6. When an alias member is specified by physical fabric port number, all devices connected to that port are in the zone. No spaces are allowed.

- Zone alias names—Zone alias names have the same format as zone names and are created with the [aliCreate](#) command.

The alias must resolve to a list of one or more physical fabric port numbers or WWNs. A zone alias should be created before it is added to a zone.

- IQNs—IQNs are specified in the following format:

*iqn.year-month.unique\_iSCSI\_domain\_ID*, as follows:

*iqn.1991-05.com.microsoft:rst-win2k-pc12*

## Examples

To create two zones, ZONE\_A and ZONE\_B:

```
switch:admin> zonecreate "ZONE_A", "21:00:00:20:37:65:ec:43; array1"
switch:admin> zonecreate "ZONE_B", "21:01:00:e0:8b:22:a2:38; 20,3"
```

## See also

[zoneAdd](#)

[zoneDelete](#)

[zoneRemove](#)

[zoneShow](#)

## zoneDelete

Deletes a zone.

### Synopsis

```
zonedelete "zoneName"
```

### Availability

admin

### Description

Use this command to delete the zone, *zoneName*.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operand is required:

"*zoneName*"                      The name of the zone, in quotation marks.

### Examples

To delete ZONE\_A:

```
switch:admin> zonedelete "ZONE_A"
```

### See also

[zoneAdd](#)

[zoneCreate](#)

[zoneRemove](#)

[zoneShow](#)



## zoneRemove

Removes a member from a zone.

### Synopsis

```
zoneremove "zoneName", "zoneMemberList"
```

### Availability

admin

### Description

Use this command to remove one or more members from the existing zone. If all members are removed, the zone is deleted.

For a description of members, see the [zoneCreate](#) help.

The member list is found by an exact string match.



**NOTE:** This command changes the defined configuration (see [cfgShow](#)). For the change to become effective, you must enable an appropriate zone configuration using the [cfgEnable](#) command.

For the change to be preserved across router reboots, save it to nonvolatile memory using the [cfgSave](#) command.

### Operands

The following operands are required:

*"zoneName"*

The name of the zone, in quotation marks.

*"zoneMemberList"*

A semicolon-separated list of one or more world wide names, domain,port pairs, zone alias names, and IQNs, in quotation marks.

### Examples

To remove 20:00:00:e0:8b:01:8f:85 and 100,3 from ZONE\_A:

```
switch:admin> zoneremove "ZONE_A", "20:00:00:e0:8b:01:8f:85; 100,3"
```

### See also

[zoneAdd](#)

[zoneCreate](#)

[zoneDelete](#)

[zoneShow](#)

## zoneShow

Displays zone information.

### Synopsis

```
zonestow [-i] [pattern]
```

### Availability

all users

### Description

Use this command without parameters to display all zone configuration information.

If a parameter is specified, it is used as a pattern to match zone names; those that match in the defined configuration are displayed.

Patterns can contain:

- Question mark (?), which matches any single character
- Asterisk (\*), which matches any string of characters
- Characters [0–9, a–z, A–Z, \_], which match the character

See [cfgShow](#) for a description of this display.

### Operands

The following operands are optional:

<code>-i</code>	Displays IQNs instead of world wide names (WWNs).
<code><i>pattern</i></code>	Pattern can contain any of the valid characters mentioned.

### Examples

To display configuration information for zones specified by the pattern `Z*1`:

```
switch:admin> zonestow "Z*1"
Zone: ZONE1
21:00:00:20:37:65:6f:16
21:00:00:20:37:65:6a:d9
100,1
20,3 (unconfirmed)
ALIAS1
```

### See also

[aliShow](#)

[cfgShow](#)

[zoneAdd](#)

[zoneCreate](#)

[zoneDelete](#)

[zoneRemove](#)

## zsdLogClear

### Synopsis

zsdlogclear

### Availability

admin

### Description

Use this command to clear the internal debug messages of the zone server.

### Operands

none

### Examples

To clear the internal debug messages:

```
switch:admin> zsdlogclear
```

### See also

[zsdLogShow](#)

## zsdLogShow

Displays the zone server's internal debug messages.

### Synopsis

zsdlogshow

### Availability

admin

### Description

Use this command to display the zone server's internal debug messages.

### Operands

none

### Examples

To display the zone server's internal debug messages:

```
switch:admin> zsdlogshow
Time          |D |OXID|  Log info
-----
16:29:09.966|01|0000|  MMI license call
16:29:12.495|ff|f101|  msg received at the Zoneserver port
16:29:12.496|ff|0113|  msg received at the Zoneserver port
16:29:12.497|ff|0114|  msg received at the Zoneserver port
16:29:12.501|ff|0114|  msg received at the Zoneserver port
16:29:12.507|ff|0117|  msg received at the Zoneserver port
16:29:12.508|ff|0114|  msg received at the Zoneserver port
16:29:12.515|ff|0118|  msg received at the Zoneserver port
16:29:22.795|ff|0202|  msg received at the Zoneserver port
16:29:22.795|ff|ffff|  activate msg zone set name [cfg2]
16:29:22.867|ff|ffff|  sending zone enable request
16:29:25.280|ff|f101|  msg received at the Zoneserver port
16:29:25.281|ff|0113|  msg received at the Zoneserver port
16:29:25.282|ff|0114|  msg received at the Zoneserver port
16:29:25.286|ff|0114|  msg received at the Zoneserver port
16:29:25.290|ff|0117|  msg received at the Zoneserver port
16:29:25.292|ff|0114|  msg received at the Zoneserver port
16:29:25.295|ff|0118|  msg received at the Zoneserver port
18:14:15.837|ff|0001|  domains list Received from fspf
18:14:28.285|ff|0001|  domains list Received from fspf
18:15:08.967|ff|f101|  msg received at the Zoneserver port
18:15:08.968|ff|0113|  msg received at the Zoneserver port
```

### See also

[zsdLogClear](#)





## 2 Default values for configuration parameters

This chapter lists the default values for:

- System configuration parameters, [Table 2](#).
- Management interface configuration parameters, [Table 3](#).
- Port configuration parameters, [Table 4](#).

### Default values for system parameters

[Table 2](#) lists the default values for the system parameters.

**Table 2** Default values for system parameters

Parameter	Default value
bbCredit	16
chassisAdmin	1
dataFieldSize	2112
defaultAccessZoning	1
definedTransZoneMgmt	0
disableNodeNameZoning	1
domain	100
domainIdConfirmFlag	0
dynamicLoadSharing	0
E_D_TOV	2000
eventLogSize	1000
fileTransferProtocol	tftp
ftpRootDir	/tftpboot
ftpServerIpAddress	0.0.0.0
ftpUserName	ftp
ftpUserPassword	ftp
gmtOffset	-480
hardZoningSupported	0
inOrderDelivery	1
MAX_HOP_COUNT	7
pollingInterval	0
R_A_TOV	10000
snmpRoCommunity	public
snmpRwCommunity	private
staticRouteTable	Empty
switchTrunk	1
sysContact	Field Support

**Table 2** Default values for system parameters (continued)

Parameter	Default value
sysDescription	Multi-protocol Router
sysLocation	End User Premise
sysName	MP Router
sysObjectID	1.3.6.1.4.1.1588.2.1.1.38
sysServices	72
sysUrl	MY_SYS_URL
temperatureShutdownThreshold	65
temperatureWarningThreshold	45
trapReceiverTable	Empty
WAN_TOV	0
wnn	0x00 0x00 0x00 0x05 0x4e 0x01 0x02 0x00

## Default values for management interface parameters

Table 3 lists the default values for management interface parameters.

**Table 3** Default values for management interface parameters

Parameter	Default value
gateway (mgmt port 1)	sync with the setup nvram
gateway (mgmt port 2)	0
ifMode (mgmt port 1)	auto
ifMode (mgmt port 2)	auto
ipAddr (mgmt port 1)	sync with the setup nvram
ipAddr (mgmt port 2)	0
netmask (mgmt port 1)	sync with the setup nvram
netmask (mgmt port 2)	0

## Default values for port parameters

Table 4 lists the default values for the port parameters.

**Table 4** Default values for port parameters

Parameter	Default value
acceptMode	2
bbCredit	16
dataFieldSize	2112
defaultGateway	0
edtov	2000
eMode	1



**Table 4** Default values for port parameters (continued)

Parameter	Default value
fcipEnable	2
ipAddr	0
linkAdmin	1
linkCost	0xffff
linkTrapEnable	1
listenPort	3225
netmask	0
portAdmin	1
portSpeed	0
portTopology	3
portType	1
promiscuousMode	1
ratov	10000
remoteEntityId	0
remoteIpAddr	0
remoteTcpPort	3225
remoteWwn	0



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# Glossary

This glossary defines terms used in this guide or related to this product and is not a comprehensive glossary of computer terms.

<b>address identifier</b>	A 24-bit or 8-bit value used to identify the source or destination of a frame.
<b>AL_PA</b>	Arbitrated Loop Physical Address. A unique 8-bit value assigned during loop initialization to a port in an arbitrated loop.
<b>AL_TIME</b>	Arbitrated loop timeout value. Twice the amount of time it would take for a transmission word to propagate around a worst-case loop. The default value is 15 milliseconds (ms).
<b>alias</b>	A logical grouping of elements in a fabric. An alias is a collection of port numbers and connected devices, used to simplify the entry of port numbers and WWNs when creating zones.
<b>alias address identifier</b>	An address identifier recognized by a port in addition to its standard identifier. An alias address identifier can be shared by multiple ports. <i>See also</i> <a href="#">alias</a> .
<b>alias AL_PA</b>	An AL_PA value recognized by an L_Port in addition to the AL_PA assigned to the port. <i>See also</i> <a href="#">AL_PA</a> .
<b>alias server</b>	A fabric software facility that supports multicast group management.
<b>ANSI</b>	American National Standards Institute.
<b>ARB</b>	Arbitrative primitive signal. Applies only to an arbitrated-loop topology. Transmitted as the fill word by an L_Port to indicate that the port is arbitrating access to the loop.
<b>arbitrated loop</b>	A shared 100-Mb/s Fibre Channel transport structured as a loop. Can support up to 126 devices and one fabric attachment. <i>See also</i> <a href="#">topology</a> .
<b>arbitration</b>	A method of gaining orderly access to a shared-loop topology.
<b>area number</b>	Ports on a switch are assigned a logical area number. Port area numbers can be viewed by entering the <a href="#">switchShow</a> command. They are used to define the operative port for many Fabric OS commands; for example, area numbers can be used to define the ports within an alias or zone.
<b>ARP</b>	Address Resolution Protocol. A TCP/IP function for associating an IP address with a link-level address.
<b>ARR</b>	Asynchronous response router. Refers to Management Server GS_Subtype Code E4, which is displayed in the <a href="#">portLogDump</a> command output.
<b>ASD</b>	Alias server daemon. Used for managing multicast groups by supporting the create, add, remove, and destroy functions.
<b>ASIC</b>	Application-specific integrated circuit.
<b>ATM</b>	Asynchronous Transfer Mode. A transport used for transmitting data over LANs or WANs that transmit fixed-length units of data. Provides any-to-any connectivity and allows nodes to transmit simultaneously.
<b>authentication</b>	The process of verifying that an entity in a fabric (such as a switch) is what it claims to be. <i>See also</i> <a href="#">digital certificate</a> , <a href="#">switch-to-switch authentication</a> .
<b>AW_TOV</b>	Arbitration wait timeout value. The minimum time an arbitrating L_Port waits for a response before beginning loop initialization.
<b>bandwidth</b>	The total transmission capacity of a cable, link, or system. Usually measured in bps (bits per second). Bandwidth can also refer to the range of transmission frequencies available to a link or system. <i>See also</i> <a href="#">throughput</a> .
<b>BB_Credit</b>	buffer-to-buffer credit. The number of frames that can be transmitted to a directly connected recipient or within an arbitrated loop. Determined by the number of receive buffers available. <i>See also</i> <a href="#">buffer-to-buffer flow control</a> , <a href="#">EE_Credit</a> .

<b>beacon</b>	A tool in which all of the port LEDs on an MP Router are set to flash from one side of the switch to the other, to enable identification of an individual MP Router in a large fabric. An MP Router can be set to beacon by the <a href="#">beacon</a> command.
<b>beginning running disparity</b>	The disparity at the transmitter or receiver when the special character associated with an ordered set is encoded or decoded. See also <a href="#">disparity</a> .
<b>BER</b>	Bit error rate. The rate at which bits are expected to be received in error. Expressed as the ratio of error bits to total bits transmitted. See also <a href="#">error</a> .
<b>BISR</b>	Built-in self-repair.
<b>BIST</b>	Built-in self-test.
<b>bit synchronization</b>	The condition in which a receiver is delivering retimed serial data at the required bit error rate.
<b>blind-mate connector</b>	A two-way connector used in some HP StorageWorks switches to provide a connection between the motherboard and the power supply.
<b>block</b>	As it applies to Fibre Channel technology, upper-level application data that is transferred in a single sequence.
<b>boot code</b>	Software that initializes the system environment during the early phase of the boot process. For example, boot code might determine the amount of available memory and how to access it.
<b>boot flash</b>	Flash (temporary) memory that stores the boot code.
<b>bport</b>	Back-end port of the ASIC.
<b>broadcast</b>	The transmission of data from a single source to all devices in the fabric, regardless of zoning. See also <a href="#">multicast</a> , <a href="#">unicast</a> .
<b>buffer-to-buffer flow control</b>	Management of the frame transmission rate in either a point-to-point topology or in an arbitrated loop. See also <a href="#">BB_Credit</a> .
<b>bypass circuitry</b>	Circuits that automatically remove a device from the data path when valid signals are dropped.
<b>CA</b>	Certificate authority. A trusted organization that issues digital certificates. See also <a href="#">digital certificate</a> .
<b>CAM</b>	Content-addressable memory.
<b>CAN</b>	Campus area network. A network comprising a limited area but not just one building. See also <a href="#">LAN</a> , <a href="#">MAN</a> , <a href="#">WAN</a> .
<b>cascade</b>	Two or more interconnected Fibre Channel switches. See also <a href="#">fabric</a> , <a href="#">ISL</a> .
<b>CFG</b>	Configuration.
<b>chassis</b>	The metal frame in which the switch and switch components are mounted.
<b>CIM</b>	Common Information Model. A management structure enabling disparate resources to be managed by a common application.
<b>circuit</b>	An established communication path between two ports. Consists of two virtual circuits capable of transmitting in opposite directions.
<b>Class 1 service</b>	The class of frame-switching service for a dedicated connection between two communicating ports (also called <i>connection-oriented service</i> ). Includes acknowledgement of frame delivery or nondelivery.
<b>Class 2 service</b>	A connectionless class of frame-switching service that includes acknowledgement of frame delivery or nondelivery.
<b>Class 3 service</b>	A connectionless class of frame-switching service that does not include acknowledgement of frame delivery or nondelivery. Can be used to provide a multicast connection between the frame originator and recipients, with acknowledgement of frame delivery or nondelivery.
<b>Class 4 service</b>	A connection-oriented service that allows fractional parts of the bandwidth to be used in a virtual circuit.
<b>Class 6 service</b>	A connection-oriented multicast service geared toward video broadcasts between a central server and clients.

<b>Class F service</b>	The class of frame-switching service for a direct connection between two switches, allowing communication of control traffic between the E_Ports. Includes acknowledgement of data delivery or nondelivery.
<b>class of service</b>	A specified set of delivery characteristics and attributes for frame delivery.
<b>CLI</b>	Command line interface. An interface that depends entirely on the use of commands, such as through Telnet or SNMP, and does not involve a GUI.
<b>client</b>	An entity that, using its common transport (CT), makes requests of a server.
<b>CLS</b>	Close primitive signal. Used only in an arbitrated loop. Sent by an L_Port that is currently communicating in the loop to close communication with another L_Port.
<b>CM</b>	Central memory.
<b>CMA</b>	Central memory architecture. An architecture centralizing memory usage in switches.
<b>CMBISR</b>	Central memory built-in self-repair.
<b>CMT</b>	Central memory test.
<b>comma</b>	A unique pattern (either 1100000 or 0011111) used in 8b/10b encoding to specify character alignment within a data stream. <i>See also</i> <a href="#">K28.5</a> .
<b>community (SNMP)</b>	A relationship between a group of SNMP managers and an SNMP agent, in which authentication, access control, and proxy characteristics are defined. <i>See also</i> <a href="#">SNMP</a> .
<b>compact flash</b>	Flash (temporary) memory that is used in a manner similar to hard disk storage. It is connected to a bridging component that connects to the PCI bus of the processor. Not visible within the processor's memory space.
<b>configuration</b>	(1) A set of parameters that can be modified to fine-tune the operation of a switch. Use the <a href="#">configShow</a> command to view the current configuration of your switch. (2) In zoning, a zoning element that contains a set of zones. The configuration is the highest-level zoning element and is used to enable or disable a set of zones on the fabric. <i>See also</i> <a href="#">zone configuration</a> .
<b>congestion</b>	The realization of the potential of oversubscription. A congested link is one on which multiple devices are contending for bandwidth.
<b>connection initiator</b>	A port that has originated a Class 1 dedicated connection and has received a response from the recipient.
<b>connection recipient</b>	A port that has received a Class 1 dedicated connection request and has transmitted a response to the originator.
<b>controller</b>	A computer module that interprets signals between a host and a peripheral device. The controller typically is part of the peripheral device.
<b>core PID</b>	Core switch port identifier. The core PID must be set for OS 3.1 and earlier switches included in a fabric of 4.1 switches. This parameter is located in the <a href="#">configure</a> command of firmware versions 3.1 and earlier. All 4.1 switches and later use the core PID format by default; this parameter is not present in the <a href="#">configure</a> command for these switches.
<b>COS</b>	Class of service.
<b>CP</b>	Control processor.
<b>CPLD</b>	Complex PLD. Alternately known as <i>Enhanced PLD (EPLD)</i> , <i>Super PAL</i> , and <i>Mega PAL</i> .
<b>CRC</b>	Cyclic redundancy check. A transmission error check that is included in every data frame.
<b>credit</b>	As it applies to Fibre Channel technology, the number of receive buffers available to transmit frames between ports. <i>See also</i> <a href="#">BB_Credit</a> , <a href="#">EE_Credit</a> .
<b>cut-through</b>	A switching technique that allows the route for a frame to be selected as soon as the destination address is received. <i>See also</i> <a href="#">route</a> .
<b>D_ID</b>	Destination identifier. A 3-byte field in the frame header, used to indicate the address identifier of the N_Port to which the frame is headed.
<b>DAS</b>	Direct attached storage.

<b>data word</b>	A type of transmission word that occurs within frames. The frame header, data field, and CRC all consist of data words. See also <a href="#">frame</a> , <a href="#">ordered set</a> , <a href="#">transmission word</a> .
<b>datagram</b>	A Class 3 Fibre Channel service that allows data to be sent quickly to devices attached to the fabric, without receipt confirmation.
<b>DCE</b>	Data communications equipment. Usually refers to a modem.
<b>dedicated simplex</b>	A connection method that permits a single N_Port to simultaneously initiate a session with one N_Port as an initiator and have a separate Class 1 connection to another N_Port as a recipient.
<b>defined zone configuration</b>	The set of all zone objects defined in the fabric. Can include multiple zone configurations. See also <a href="#">enabled zone configuration</a> , <a href="#">zone configuration</a> .
<b>DHCP</b>	Dynamic Host Configuration Protocol.
<b>DHCPD</b>	Dynamic Host Configuration Protocol daemon.
<b>digital certificate</b>	An electronic document issued by a CA (certificate authority) to an entity, containing the public key and identity of the entity. Entities in a secure fabric are authenticated based on these certificates. See also <a href="#">authentication</a> , <a href="#">CA</a> , <a href="#">public key</a> .
<b>disparity</b>	The proportion of ones and zeroes in an encoded character. <i>Neutral disparity</i> means an equal number of each, <i>positive disparity</i> means a majority of ones, and <i>negative disparity</i> means a majority of zeroes.
<b>DLS</b>	Dynamic load-sharing. Dynamic distribution of traffic over available paths. Allows for recomputing of routes when an Fx_Port or an E_Port changes status.
<b>domain controller</b>	A domain controller (or embedded port) communicates with and gets updates from other switches' embedded ports. The well-known address is <code>fffcdd</code> , where <code>dd</code> = domain number.
<b>domain ID</b>	A unique identifier for all switches in a fabric, used in routing frames. Usually automatically assigned by the principal switch but can be assigned manually.
<b>DTE</b>	Data terminal equipment. Usually refers to a terminal.
<b>DWDM</b>	Dense wave division multiplexing. Allows more wavelengths to use the same fiber. See also <a href="#">WDM</a> .
<b>E_D_TOV</b>	Error-detect timeout value. The minimum amount of time a target waits for a sequence to complete before initiating recovery. Can also be defined as the maximum time allowed for a round-trip transmission before an error is declared. See also <a href="#">R_A_TOV</a> , <a href="#">RR_TOV</a> .
<b>E_Port</b>	Expansion port. A type of switch port that can be connected to an E_Port on another switch to create an ISL. See also <a href="#">ISL</a> .
<b>ECCN</b>	Export classification control number. A government classification of encryption. For example, SSH is in the high-encryption category (number 5x02) and therefore has certain restrictions regarding its transfer.
<b>EE_Credit</b>	End-to-end credit. The number of receive buffers allocated by a recipient port to an originating port. Used by Class 1 and 2 services to manage frame exchange across the fabric, between source and destination. See also <a href="#">BB_Credit</a> , <a href="#">end-to-end flow control</a> .
<b>EIA rack</b>	A storage rack that meets the standards set by the Electronics Industry Alliance (EIA).
<b>ELP</b>	Exchange link parameters.
<b>ELS</b>	Extended link service. ELSs are sent to the destination N_Port to perform the requested function or service. ELS is a Fibre Channel standard that is sometimes referred to as <i>Fibre Channel Physical (FC_PH) ELS</i> .
<b>EM</b>	Environmental monitor. Monitors FRUs and reports failures.
<b>embedded port</b>	An embedded port (or domain controller) communicates and get updates from other switches' embedded ports. The well-known address is <code>fffcdd</code> , where <code>dd</code> = domain number.
<b>EMI</b>	Electromagnetic interference.
<b>emulex</b>	A brand of host bus adapter (HBA).
<b>enabled zone configuration</b>	The currently enabled configuration of zones. Only one configuration can be enabled at a time. See also <a href="#">defined zone configuration</a> , <a href="#">zone configuration</a> .

<b>end-to-end flow control</b>	Governs flow of Class 1 and 2 frames between N_Ports. See also <a href="#">EE_Credit</a> .
<b>entry fabric</b>	The basic software license that allows one E_Port per switch.
<b>EOF</b>	End of frame. A group of ordered sets used to mark the end of a frame.
<b>error</b>	As it applies to the Fibre Channel industry, a missing or corrupted frame, timeout, loss of synchronization, or loss of signal (link errors). See also <a href="#">loop failure</a> .
<b>Ethernet</b>	Popular protocol for LANs.
<b>EVMd</b>	Event management database. Delivers FDMI-related events.
<b>exchange</b>	The highest-level Fibre Channel mechanism used for communication between N_Ports. Composed of one or more related sequences, it can work in either one or both directions.
<b>F_BSY</b>	Fabric port busy frame. A frame issued by the fabric to indicate that a frame cannot be delivered because the fabric or destination N_Port is busy.
<b>F_Port</b>	Fabric port. A port that is able to transmit under fabric protocol and interface over links. Can be used to connect an N_Port to a switch. See also <a href="#">FL_Port</a> , <a href="#">Fx_Port</a> .
<b>F_RJT</b>	Fabric port reject frame. A frame issued by the fabric to indicate that delivery of a frame is being denied, perhaps because a class is not supported, there is an invalid header, or no N_Port is available.
<b>fabric</b>	A Fibre Channel network containing two or more switches in addition to hosts and devices. Also referred to as a <i>switched fabric</i> . See also <a href="#">cascade</a> , <a href="#">SAN</a> , <a href="#">topology</a> .
<b>Fabric Mode</b>	One of two possible modes for an L_Port, in which the L_Port is connected to another port that is not loop capable, using fabric protocol.
<b>fabric name</b>	The unique identifier assigned to a fabric and communicated during login and port discovery.
<b>fabric port count</b>	The number of ports available for connection by nodes in a fabric.
<b>fabric services</b>	Codes that describe the communication to and from any well-known address.
<b>fabric topology</b>	The arrangement of switches that form a fabric.
<b>failover</b>	Describes the process of one CP passing active status to another CP. A failover is nondisruptive.
<b>FAN</b>	Fabric address notification. Retains the AL_PA and fabric address when a loop reinitializes, if the switch supports FAN.
<b>fan-in</b>	The ratio of hosts to storage devices; the view of the SAN from the storage port's perspective.
<b>fan-out</b>	The ratio of storage devices to hosts; the view of the SAN from the host port's perspective.
<b>FC-0</b>	Lowest layer of Fibre Channel transport. Represents physical media.
<b>FC-1</b>	Layer of Fibre Channel transport that contains the 8b/10b encoding scheme.
<b>FC-2</b>	Layer of Fibre Channel transport that handles framing and protocol, frame format, sequence/exchange management, and ordered set usage.
<b>FC-3</b>	Layer of Fibre Channel transport that contains common services used by multiple N_Ports in a node.
<b>FC-4</b>	Layer of Fibre Channel transport that handles standards and profiles for mapping upper-level protocols, such as SCSI and IP, onto the Fibre Channel Protocol.
<b>FC-AL-3</b>	The Fibre Channel Arbitrated Loop standard defined by ANSI. Defined on top of the FC-PH standards.
<b>FC-AV</b>	Fibre Channel audio visual.
<b>FCC</b>	Federal Communications Commission.
<b>FC-CT</b>	Fibre Channel common transport.
<b>FC-FG</b>	Fibre Channel generic requirements.
<b>FC-FLA</b>	The Fibre Channel fabric loop-attach standard defined by ANSI.
<b>FC-FS</b>	Fibre Channel framing and signaling.
<b>FC-GS</b>	Fibre Channel generic services.

<b>FC-GS-2</b>	Fibre Channel generic services, second generation.
<b>FC-GS-3</b>	Fibre Channel Generic Services, third generation.
<b>FC_IP</b>	Fibre Channel-over-IP.
<b>FC-PH</b>	The Fibre Channel Physical and Signaling Interface standard for FC-0, FC-1, and FC-2 layers of the Fibre Channel Protocol. Indicates signaling used for cable plants, media types, and transmission speeds.
<b>FC-PH-2</b>	Fibre Channel Physical Interface, second generation.
<b>FC-PH-3</b>	Fibre Channel Physical Interface, third generation.
<b>FC-PI</b>	Fibre Channel Physical Interface standard, defined by ANSI.
<b>FC-PLDA</b>	The Fibre Channel Private Loop Direct Attach standard defined by ANSI. Applies to the operation of peripheral devices on a private loop.
<b>FC_SB</b>	Fibre Channel single bytes.
<b>FC_VI</b>	Fibre Channel virtual interface.
<b>FCA</b>	Fibre Channel adapter.
<b>FCIA</b>	Fibre Channel Industry Association. An international organization of Fibre Channel industry professionals. Provides oversight of ANSI and industry-developed standards, among other tasks.
<b>FCLC</b>	Fibre Channel Loop Community.
<b>FCP</b>	Fibre Channel Protocol. Mapping of protocols onto the Fibre Channel standard protocols. For example, SCSI FCP maps SCSI-3 onto Fibre Channel.
<b>FCS</b>	Fibre Channel Standard.
<b>FC-SW-2</b>	The second-generation Fibre Channel Switch Fabric standard defined by ANSI. Specifies tools and algorithms for the interconnection and initialization of Fibre Channel switches to create a multiswitch Fibre Channel fabric.
<b>FDDI</b>	Fiber Distributed Data Interface. An ANSI architecture for a metropolitan area network (MAN); a network based on the use of fiber optic cable to transmit data at 100 Mb/s.
<b>FDMI</b>	Fabric-Device Management Interface. FDMI is a database service provided by the fabric for Nx_Ports. The primary use is by HBA devices that register information about themselves and their ports.
<b>FFFFF5</b>	Well-known Fibre Channel address for a Class 6 multicast server.
<b>FFFFF6</b>	Well-known Fibre Channel address for a clock synchronization server.
<b>FFFFF7</b>	Well-known Fibre Channel address for a security key distribution server.
<b>FFFFF8</b>	Well-known Fibre Channel address for an alias server.
<b>FFFFF9</b>	Well-known Fibre Channel address for a QoS facilitator.
<b>FFFFFA</b>	Well-known Fibre Channel address for a management server.
<b>FFFFFB</b>	Well-known Fibre Channel address for a time server.
<b>FFFFFC</b>	Well-known Fibre Channel address for a directory server.
<b>FFFFFD</b>	Well-known Fibre Channel address for a fabric controller.
<b>FFFFFE</b>	Well-known Fibre Channel address for a fabric F_Port.
<b>FFFFF</b>	Well-known Fibre Channel address for a broadcast alias ID.
<b>Fibre Channel</b>	Fibre Channel is a protocol used to transmit data between servers, switches, and storage devices. It is a high-speed, serial, bidirectional, topology-independent, multiprotocol, and highly scalable interconnection between computers, peripherals, and networks.
<b>Fibre Channel transport</b>	A protocol service that supports communication between Fibre Channel service providers. See also <a href="#">FSP</a> .
<b>FIFO</b>	First in, first out. Refers to a data buffer that follows the first in, first out rule.
<b>fill word</b>	An IDLE or ARB ordered set that is transmitted during breaks between data frames to keep the Fibre Channel link active.



<b>firmware</b>	The basic operating system provided with the hardware.
<b>FL_Port</b>	Fabric loop port. A port that is able to transmit under fabric protocol and also has arbitrated loop capabilities. Can be used to connect an NL_Port to a switch. See also <a href="#">F_Port</a> , <a href="#">Fx_Port</a> .
<b>flash</b>	Programmable nonvolatile RAM (NVRAM) memory that maintains its contents without power.
<b>FLOGI</b>	Fabric login. The process by which an N_Port determines whether a fabric is present and, if so, exchanges service parameters with it. See also <a href="#">PLOGI</a> .
<b>FOTP</b>	Fiber Optic Test Procedure. Standards developed and published by the Electronic Industries Association (EIA) under the EIA-RS-455 series of standards.
<b>FPD</b>	Field-programmable device. Interchangeable with <a href="#">PLD</a> .
<b>FPGA</b>	Field-programmable gate array. An FPD that allows high logic capacity.
<b>fractional bandwidth</b>	The partial use of a link to send data back and forth, with a maximum of 254 Class 4 connections per N_Port.
<b>frame</b>	The Fibre Channel structure used to transmit data between ports. Consists of a start-of-frame delimiter, header, optional headers, data payload, cyclic redundancy check (CRC), and end-of-frame delimiter. There are two types of frames: link control frames (transmission acknowledgements and so forth) and data frames.
<b>frame relay</b>	A protocol that uses logical channels, as used in X.25. Provides very little error-checking ability. Discards frames that arrive with errors. Allows a certain level of bandwidth between two locations [known as a <i>committed information rate (CIR)</i> ] to be guaranteed by the service provider. If CIR is exceeded for short periods (known as <i>bursts</i> ), the network accommodates the extra data, if spare capacity is available. Frame relay is therefore known as <i>bandwidth on demand</i> .
<b>FRU</b>	Field replaceable unit. A component that can be replaced onsite.
<b>FS</b>	Fibre Channel service. A service that is defined by Fibre Channel standards and exists at a well-known address. For example, the Simple Name Server is a Fibre Channel service. See also <a href="#">FSP</a> .
<b>FSP</b>	Fibre Channel Service Protocol. The common protocol for all fabric services, transparent to the fabric type or topology. See also <a href="#">FS</a> .
<b>FSPF</b>	Fabric shortest path first. The routing protocol for Fibre Channel switches.
<b>FSS</b>	Fabric OS state synchronization. The FSS service is related to high availability (HA). The primary function of FSS is to deliver state update messages from active components to their peer standby components. FSS determines if fabric elements are synchronized (and thus FSS <i>compliant</i> ).
<b>FTP</b>	File Transfer Protocol.
<b>FTS</b>	Fiber Transport Services.
<b>full duplex</b>	A mode of communication that allows the same port to simultaneously transmit and receive frames. See also <a href="#">half duplex</a> .
<b>full fabric</b>	The software license that allows multiple E_Ports on a switch, making it possible to create multiple ISL links.
<b>full fabric citizenship</b>	A loop device that has an entry in the Simple Name Server.
<b>Fx_Port</b>	A fabric port that can operate as either an F_Port or FL_Port. See also <a href="#">F_Port</a> , <a href="#">FL_Port</a> .
<b>G_Port</b>	Generic port. A port that can operate as either an E_Port or an F_Port. A port is defined as a G_Port when it is not yet connected or has not yet assumed a specific function in the fabric.
<b>gateway</b>	Hardware that connects incompatible networks by providing translation for both hardware and software. For example, an ATM gateway can be used to connect a Fibre Channel link to an ATM connection.
<b>GBIC</b>	Gigabit interface converter. A removable serial transceiver module that allows gigabaud physical-level transport for Fibre Channel and Gigabit Ethernet.
<b>Gb/s</b>	Gigabits per second (1,062,500,000 bits/second).
<b>GB/s</b>	Gigabytes per second (1,062,500,000 bytes/second).

<b>GLM</b>	Gigabit link module. A semitransparent transceiver that incorporates serializing/deserializing functions.
<b>GMT</b>	Greenwich Mean Time. An international time zone. <i>Also known as UTC.</i>
<b>GUI</b>	A graphic user interface, such as Advanced Web Tools and Fabric Manager.
<b>HA</b>	High availability. High-availability features are designed to provide maximum reliability and nondisruptive replacement of key hardware and software modules.
<b>half duplex</b>	A mode of communication that allows a port to either transmit or receive frames at any time except simultaneously (with the exception of link control frames, which can be transmitted at any time). <i>See also <a href="#">full duplex</a>.</i>
<b>hard address</b>	The AL_PA that an NL_Port attempts to acquire during loop initialization.
<b>HBA</b>	Host bus adapter. The interface card between a server or workstation bus and the Fibre Channel network.
<b>HCPLD</b>	High-capacity PLD. Refers to both CPLDs and FPGAs.
<b>header</b>	A Fibre Channel frame has a header and a payload. The header contains control and addressing information associated with the frame.
<b>HiPPI</b>	High-Performance Parallel Interface. An 800 Mb/s interface normally used in supercomputer environments.
<b>hop count</b>	The number of ISLs a frame must traverse to get from its source to its destination.
<b>host</b>	A computer system that provides end users with services like computation and storage access.
<b>hot swappable</b>	A hot-swappable component can be replaced under power.
<b>HP StorageWorks</b>	The brand name for the HP family of switches.
<b>HSSDC</b>	High-speed serial data connection. A form factor that allows quick connections for copper interface.
<b>HSSDC-2</b>	A second-generation HSSDC connector.
<b>HTTP</b>	Hypertext Transfer Protocol. The standard TCP/IP transfer protocol used on the World Wide Web.
<b>hub</b>	A Fibre Channel wiring concentrator that collapses a loop topology into a physical-star topology. Nodes are automatically added to the loop when active and removed when inactive.
<b>hunt group</b>	A number of N_Ports registered as a single Alias_ID so that the fabric can route a word to a port that is not busy.
<b>HW</b>	Hardware.
<b>I2C</b>	Related to internal circuitry on the motherboard.
<b>ICT</b>	Intracircuit test.
<b>ID_ID</b>	Insistent domain ID. A parameter of the <a href="#">configure</a> command in the Fabric OS.
<b>idle</b>	Continuous transmission of an ordered set over a Fibre Channel link when no data is being transmitted, to keep the link active and maintain bit, byte, and word synchronization.
<b>iFCP</b>	Internet Fibre Channel Protocol. Supports Fibre Channel Layer 4 FCP-over-TCP/IP. It is a gateway-to-gateway protocol in which TCP/IP switching and routing components enhance or replace Fibre Channel fabric.
<b>in-band</b>	Transmission of management protocol over the Fibre Channel.
<b>initiator</b>	A server or workstation on a Fibre Channel network that initiates communication with storage devices. <i>See also <a href="#">target</a>.</i>
<b>intercabinet</b>	A specification for copper cabling that allows up to 33-meter distances between cabinets.
<b>intermix</b>	Allows any unused bandwidth in a Class 1 connection.
<b>intracabinet</b>	A specification for copper cabling that allows up to a 13-meter (42-foot) distance within a single cabinet.
<b>IOCTL</b>	I/O control.

<b>IOD</b>	In-order delivery. A parameter that, when set, guarantees that frames are either delivered in order or dropped.
<b>IP</b>	Internet Protocol. The addressing part of TCP.
<b>IPI</b>	Intelligent Peripheral Interface.
<b>ISC</b>	Internet Software Consortium.
<b>iSCSI</b>	Internet Small Computer Systems Interface. A protocol that defines the processes for transferring block storage applications over TCP/IP networks by encapsulating SCSI commands into TCP and transporting them over the network by way of IP.
<b>ISL</b>	Interswitch link. A Fibre Channel link from the E_Port of one switch to the E_Port of another. See also <a href="#">cascade</a> , <a href="#">E_Port</a> .
<b>ISL oversubscription ratio</b>	The ratio of the number of free ports (non-ISL) to the number of ISLs on a switch.
<b>isolated E_Port</b>	An E_Port that is online but not operational due to overlapping domain IDs or nonidentical parameters (such as E_D_TOVs). See also <a href="#">E_Port</a> .
<b>ISP</b>	Internet service provider.
<b>IU</b>	Information unit. A set of information as defined by either an upper-level process protocol definition or upper-level protocol mapping.
<b>JBOD</b>	Just a bunch of disks. Indicates a number of disks connected in a single chassis to one or more controllers. See also <a href="#">RAID</a> .
<b>jitter</b>	A deviation in timing for a bit stream as it flows through a physical medium.
<b>K28.5</b>	A special 10-bit character used to indicate the beginning of a transmission word that performs Fibre Channel control and signaling functions. The first 7 bits of the character are the comma pattern. See also <a href="#">comma</a> .
<b>key</b>	A string of data (usually a numeric value) shared between two entities and used to control a cryptographic algorithm. Usually selected from a large pool of possible keys to make unauthorized identification of the key difficult. See also <a href="#">key pair</a> .
<b>key pair</b>	In public key cryptography, a pair of keys consisting of an entity's public and private key. The public key can be publicized, but the private key must be kept secret. See also <a href="#">public key cryptography</a> .
<b>L_Port</b>	Loop port. A node port (NL_Port) or fabric port (FL_Port) that has arbitrated loop capabilities. An L_Port can be in either Fabric Mode or Loop Mode.
<b>LAN</b>	Local area network. A network in which transmissions typically take place over fewer than 5 kilometers (3.4 miles).
<b>latency</b>	The time required to transmit a frame. Together, latency and bandwidth define the speed and capacity of a link or system.
<b>LED</b>	Light-emitting diode. Used to indicate the status of elements on a switch.
<b>LIFA</b>	Loop-initialization fabric-assigned frame. Contains a bitmap of all fabric-assigned AL_PAs and is the first frame transmitted in the loop initialization process after a temporary loop master has been selected.
<b>LIHA</b>	Loop-initialization hard-assigned frame. A hard-assigned AL_PA that is indicated by a bit set and is the third frame transmitted in the loop initialization process after a temporary loop master has been selected.
<b>LILP</b>	Loop-initialization loop-position frame. The final frame transmitted in a loop initialization process. A returned LIRP contains an accumulation of all of the AL_PA position maps. This allows loop members to determine their relative loop position. This is an optional frame and is not transmitted unless the LIRP is also transmitted.
<b>link control facility</b>	A termination that handles physical and logical control of the Fibre Channel link for each mode.
<b>Link Services</b>	A protocol for link-related actions.

<b>LIP</b>	Loop initialization primitive. The signal used to begin initialization in a loop. Indicates either loop failure or node resetting.
<b>LIPA</b>	Loop-initialization previously assigned. The device marks a bit in the bitmap if it did not log in with the fabric in a previous loop initialization.
<b>LIRP</b>	Loop-initialization report position frame. The first frame transmitted in the loop initialization process after all L_Ports have selected an AL_PA. The LIRP gets transmitted around the loop so all L_Ports can report their relative physical position. This is an optional frame.
<b>LISA</b>	Loop-initialization soft-assigned frame. The fourth frame transmitted in the loop initialization process after a temporary loop master has been selected. L_Ports that have not selected an AL_PA in a LIFA, LIPA, or LIHA frame select their AL_PA here.
<b>LISM</b>	Loop-initialization select master frame. The first frame transmitted in the initialization process when L_Ports select an AL_PA. LISM is used to select a temporary loop master or the L_Port that will subsequently start transmission of the LIFA, LIPA, LIHA, LISA, LIRP, or LILP frames.
<b>LM_TOV</b>	Loop master timeout value. The minimum time that the loop master waits for a loop initialization sequence to return.
<b>login server</b>	The unit that responds to login requests.
<b>loop circuit</b>	A temporary bidirectional communication path established between L_Ports.
<b>loop failure</b>	Loss of signal within a loop for any period of time, or loss of synchronization for longer than the timeout value.
<b>Loop_ID</b>	A hexadecimal value representing one of the 127 possible AL_PA values in an arbitrated loop.
<b>loop initialization</b>	The logical procedure used by an L_Port to discover its environment. Can be used to assign AL_PA addresses, detect loop failure, or reset a node.
<b>Loop Mode</b>	One of two possible modes for an L_Port, in which the L_Port is in an arbitrated loop, using loop protocol. An L_Port in Loop Mode can also be in Participating Mode or Nonparticipating Mode.
<b>looplest</b>	A set of devices connected in a loop to a port that is a member of another loop.
<b>LPB</b>	Loop port bypass. A primitive sequence transmitted by an L_Port to bypass one or all L_Ports to which it is directed. It is used only in arbitrated loops.
<b>LPE</b>	Loop port enable. A primitive sequence transmitted by an L_Port to enable one or all L_Ports that have been bypassed with the LPB. It is used only in arbitrated loops.
<b>LPSM</b>	Loop Port State Machine. Logic that monitors and performs the tasks required for initialization and access to the loop. It is maintained by an L_Port to track behavior through different phases of loop operations. Alternatively, the logical entity that performs arbitrated-loop protocols and defines the behavior of L_Ports when they require access to an arbitrated loop.
<b>LR</b>	Link reset. A primitive sequence used during link initialization between two N_Ports in point-to-point topology or an N_Port and an F_Port in fabric topology. The expected response is an LRR.
<b>LRR</b>	Link reset response. A primitive sequence during link initialization between two N_Ports in point-to-point topology or an N_Port and an F_Port in fabric topology. It is sent in response to an LR and expects a response of Idle.
<b>LWL</b>	Long wavelength. A type of fiber optic cabling that is based on 1300-nm lasers and supports link speeds of 1.0625 Gb/s. LWL can also refer to the type of GBIC or SFP. See also <a href="#">SWL</a> .
<b>MALLOC</b>	Memory allocation. Usually relates to buffer credits.
<b>MAN</b>	Metropolitan area network.
<b>MB/s</b>	Megabytes per second.
<b>Mb/s</b>	Megabits per second.

<b>meta-SAN</b>	The collection of all devices, switches, edge and backbone fabrics, LSANs, and FC routers that make up a physically connected but logically partitioned storage network. LSANs span between edge fabrics using FC routers. In a data network, this would simply be called <i>the network</i> . However, an additional term is required to specify the difference between a single-fabric network (SAN), a multifabric network without cross-fabric connectivity ( <i>dual-redundant fabric SAN</i> ), and a multifabric network with connectivity ( <i>meta-SAN</i> ).
<b>metric</b>	A relative value assigned to a route to aid in calculating the shortest path (1000 at 1 Gb/s, 500 at 2 Gb/s).
<b>MIA</b>	Media interface adapter. A device that converts optical connections to copper ones, and vice versa.
<b>MIB</b>	Management Information Base. An SNMP structure to help with device management, providing configuration and device information.
<b>MMF</b>	Multimode fiber. See also <a href="#">SWL</a> .
<b>MRK</b>	Mark primitive signal. Used only in arbitrated loop, MRK is transmitted by an L_Port for synchronization and is vendor specific.
<b>MS</b>	Management Server. The Management Server allows a storage area network (SAN) management application to retrieve information and administer the fabric and interconnected elements, such as switches, servers, and storage devices. The MS is located at the Fibre Channel well-known address FFFFFAh.
<b>MSD</b>	Management Server daemon. Monitors the MS. Includes the Fabric Configuration Service and the Unzoned Name Server.
<b>MTBF</b>	Mean time between failures. An expression of time, indicating the longevity of a device.
<b>multicast</b>	The transmission of data from a single source to multiple specified N_Ports (as opposed to all the ports on the network). See also <a href="#">broadcast</a> , <a href="#">unicast</a> .
<b>multimode</b>	A fiber optic cabling specification that allows up to 500 meters between devices.
<b>N_Port</b>	Node port. A port on a node that can connect to a Fibre Channel port or to another N_Port in a point-to-point connection. See also <a href="#">NL_Port</a> , <a href="#">Nx_Port</a> .
<b>NAS</b>	Network attached storage. A disk array connected to a controller that gives access through a LAN.
<b>NDMP</b>	Network Data Management Protocol. Used for tape backup without using server resources.
<b>NL_Port</b>	Node loop port. A node port that has arbitrated loop capabilities. Used to connect an equipment port to the fabric in a loop configuration through an FL_Port. See also <a href="#">Nx_Port</a> .
<b>node</b>	A Fibre Channel device that contains an N_Port or NL_Port.
<b>node count</b>	The number of nodes attached to a fabric.
<b>node name</b>	The unique identifier for a node, communicated during login and port discovery.
<b>Nonparticipating Mode</b>	A mode in which an L_Port in a loop is inactive and cannot arbitrate or send frames but can retransmit received transmissions. This mode is entered if there are more than 127 devices in a loop and an AL_PA cannot be acquired. See also <a href="#">L_Port</a> , <a href="#">Participating Mode</a> .
<b>NOS</b>	Not operational. The NOS primitive sequence is transmitted to indicate that the FC_Port transmitting the NOS has detected a link failure or is offline, waiting for the offline sequence (OLS) to be received.
<b>NS</b>	Name Server. The service provided by a fabric switch that stores names, addresses, and attributes related to Fibre Channel objects. Can cache information for up to 15 minutes. Also known as <i>Simple Name Server</i> or as a <i>directory service</i> . See also <a href="#">Simple Name Server</a> .
<b>NSCAM</b>	Name Server Cache Manager. Updates the Name Server (NS) databases across switches as a background task.
<b>Nx_Port</b>	A node port that can operate as either an N_Port or an NL_Port.
<b>OFC</b>	Open fiber control. A method used to enable and disable laser signaling for higher-intensity laser transceivers.
<b>OLS</b>	Primitive sequence offline.

<b>OLTP</b>	Online transaction processing.
<b>ON</b>	Offline notification. Refers to an ELS field that is displayed in <a href="#">portLogDump</a> command output.
<b>OPN</b>	Open primitive signal. Applies only to an arbitrated loop; sent by an L_Port that has won the arbitration process to open communication with one or more ports on the loop.
<b>ordered set</b>	<p>A transmission word that uses 8b/10b mapping and begins with the K28.5 character. Ordered sets occur outside of frames and include the following items:</p> <ul style="list-style-type: none"> <li>• Frame delimiters—Mark frame boundaries and describe frame contents.</li> <li>• Primitive signals—Indicate events.</li> <li>• Primitive sequences—Indicate or initiate port states.</li> </ul> <p>Ordered sets are used to differentiate Fibre Channel control information from data frames and to manage frame transport.</p>
<b>originator</b>	The Nx_Port that originated an exchange.
<b>out of band</b>	Transmission of management protocol outside of the Fibre Channel network, usually over Ethernet.
<b>oversubscription</b>	A situation in which more nodes could potentially contend for a resource than the resource could simultaneously support (typically an ISL). Oversubscription could be a desirable attribute in fabric topology, as long as it does not produce unacceptable levels of congestion.
<b>OX_ID</b>	Originator ID. Refers to the exchange ID assigned by the originator port.
<b>packet</b>	A set of information transmitted across a network. <i>See also</i> <a href="#">frame</a> .
<b>PAL</b>	Programmable Array Logic. A relatively small FPD.
<b>parallel</b>	The simultaneous transmission of data bits over multiple lines.
<b>Participating Mode</b>	A mode in which an L_Port in a loop has a valid AL_PA and can arbitrate, send frames, and retransmit received transmissions. <i>See also</i> <a href="#">L_Port</a> , <a href="#">Nonparticipating Mode</a> .
<b>passive copper</b>	A low-cost copper Fibre Channel connection, allowing distances up to 13 meters between devices.
<b>path selection</b>	The selection of a transmission path through the fabric. Switches use the FSPF protocol. <i>See also</i> <a href="#">FSPF</a> .
<b>payload</b>	A Fibre Channel frame has a header and a payload. The payload contains the information being transported by the frame; it is determined by the higher-level service or FC_4 upper-level protocol. There are many different payload formats.
<b>PBC</b>	Port bypass circuit. A circuit in hubs or a disk enclosure to open or close a loop to add or remove nodes.
<b>PCBA</b>	Printed circuit board assembly.
<b>PCM</b>	Pulse-code modulation. A standard method of encoding analog audio signals in digital form.
<b>Performance Monitoring</b>	A feature that monitors port traffic and includes frame counters, SCSI read monitors, SCSI write monitors, and other types of monitors.
<b>persistent error log</b>	Error messages of a high enough level (by default, Panic or Critical) are saved to flash memory on the switch instead of to RAM. These messages are saved over reboots and power cycles, constituting the persistent error log.
<b>phantom address</b>	An AL_PA value that is assigned to a device that is not physically in the loop. <i>Also known as</i> <i>phantom AL_PA</i> .
<b>phantom device</b>	A device that is not physically in an arbitrated loop but is logically included through the use of a phantom address.
<b>PID</b>	Port identifier. <i>See also</i> <a href="#">core PID</a> .
<b>PKI</b>	Public key infrastructure. An infrastructure that is based on public key cryptography and CA (certificate authority) and that uses digital certificates. <i>See also</i> <a href="#">CA</a> , <a href="#">digital certificate</a> , <a href="#">public key cryptography</a> .

<b>PKI certification utility</b>	Public key infrastructure certification utility. A utility that makes it possible to collect certificate requests from switches and to load certificates to switches. See also <a href="#">digital certificate</a> , <a href="#">PKI</a> .
<b>PLA</b>	Programmable logic array. A small FPD.
<b>PLD</b>	Programmable logic device. Interchangeable with <a href="#">FPD</a> .
<b>PLDA</b>	Private loop direct-attached. A technical report specifying a logical loop.
<b>PLOGI</b>	Port login. The port-to-port login process by which initiators establish sessions with targets. See also <a href="#">FLOGI</a> .
<b>point to point</b>	A Fibre Channel topology that employs direct links between each pair of communicating entities. See also <a href="#">topology</a> .
<b>port</b>	An SFP or a GBIC receptacle on a switch to which an optic cable for another device is attached.
<b>port address</b>	In Fibre Channel technology, the port address is defined in hexadecimal. A port address can be defined by a domain and port number combination or by an area number.
<b>port cage</b>	The metal casing extending out of the optical port on the switch, into which the SFP can be inserted.
<b>port card</b>	A hardware component that provides a platform for field-replaceable, hot-swappable ports.
<b>port log</b>	A record of all activity on a switch, kept in volatile memory.
<b>port log dump</b>	A view of what happens on a switch, from the switch's point of view. The <a href="#">portLogDump</a> command is used to read the port log.
<b>port name</b>	A user-defined alphanumeric name for a port.
<b>port swapping</b>	Port swapping is the ability to redirect a failed port to another port.
<b>port_name</b>	The unique identifier assigned to a Fibre Channel port. Communicated during login and port discovery.
<b>POST</b>	Power-on self test. A series of tests run by a switch after it is turned on.
<b>PPP</b>	Point-to-Point Protocol.
<b>primitive sequence</b>	An ordered set that is transmitted repeatedly and continuously. Primitive sequences are transmitted to indicate specific conditions within or conditions encountered by the receiver logic of an FC_Port. See <a href="#">OLS</a> , <a href="#">NOS</a> .
<b>primitive signals</b>	An ordered set that indicates actions or events and requires just one occurrence to trigger a response. IDLE and R_RDY are used in all three topologies: ARB, OPN, and CLS. MRK is used in arbitrated loop.
<b>principal switch</b>	The first switch to boot in a fabric. Ensures unique domain IDs among roles.
<b>private device</b>	A device that supports arbitrated-loop protocol and can interpret 8-bit addresses but cannot log in to the fabric.
<b>private key</b>	The secret half of a key pair. See also <a href="#">key</a> , <a href="#">key pair</a> .
<b>private loop</b>	An arbitrated loop that does not include a participating FL_Port.
<b>private loop device</b>	A device that supports a loop and can understand 8-bit addresses but does not log in to the fabric.
<b>private NL_Port</b>	An NL_Port that communicates only with other private NL_Ports in the same loop and does not log in to the fabric.
<b>protocol</b>	A defined method and set of standards for communication. Determines the type of error checking, the data-compression method, how sending devices indicate an end of message, and how receiving devices indicate receipt of a message.
<b>pstate</b>	Port State Machine.
<b>PSU</b>	Power supply unit.
<b>public device</b>	A device that supports arbitrated-loop protocol, can interpret 8-bit addresses, and can log in to the fabric.
<b>public key</b>	The public half of a key pair. See also <a href="#">key</a> , <a href="#">key pair</a> .



<b>public key cryptography</b>	A type of cryptography that uses a key pair, with the two keys in the pair called at different points in the algorithm. The sender uses the recipient's public key to encrypt the message, and the recipient uses the recipient's private key to decrypt it. See also <a href="#">key pair</a> , <a href="#">PKI</a> .
<b>public loop</b>	An arbitrated loop that includes a participating FL_Port and can contain both public and private NL_Ports.
<b>public NL_Port</b>	An NL_Port that logs in to the fabric, can function within either a public or a private loop, and can communicate with either private or public NL_Ports.
<b>QLA</b>	A type of Fibre Channel controller.
<b>QLFA</b>	QuickLoop Fabric Assist. Arbitrated-loop technology.
<b>QoS</b>	Quality of service.
<b>quad</b>	A group of four adjacent ports that share a common pool of frame buffers.
<b>queue</b>	A mechanism for each AL_PA address that allows for collecting frames prior to sending them to the loop.
<b>QuickLoop</b>	A software product that allows multiple ports on a switch to create a logical loop. Devices connected through QuickLoop appear to each other as if they are on the same arbitrated loop.
<b>QuickLoop Mode</b>	Allows initiator devices to communicate with private or public devices that are not in the same loop.
<b>R_A_TOV</b>	Resource allocation timeout value. The maximum time a frame can be delayed in the fabric and still be delivered. See also <a href="#">E_D_TOV</a> , <a href="#">RR_TOV</a> .
<b>R_CTL</b>	Route control. The first 8 bits of the header, which defines the type of frame and its contents.
<b>R_RDY</b>	Receiver ready. A primitive signal indicating that the port is ready to receive a frame.
<b>R_T_TOV</b>	Receiver transmitter timeout value, used by receiver logic to detect loss of synchronization between transmitters and receivers.
<b>radius</b>	The greatest distance between any edge switch and the center of a fabric. A low-radius network is better than a high-radius network.
<b>RAID</b>	Redundant array of independent disks. A collection of disk drives that appear as a single volume to the server and are fault tolerant through mirroring or parity checking. See also <a href="#">JBOD</a> .
<b>RAIT</b>	Redundant array of independent tapes.
<b>RCS</b>	Reliable Commit Service. Refers to ILS command code.
<b>RCS_SFC</b>	RCS Stage Fabric Config. Refers to ILS command code.
<b>receiver</b>	A device that performs detection and signal processing.
<b>redundancy</b>	Having multiple occurrences of a component to maintain high availability (HA).
<b>remote switch</b>	An optional product for long-distance fabrics, requiring a Fibre Channel-to-ATM or SONET gateway.
<b>repeater</b>	A circuit that uses a recovered clock to regenerate and transmit an outbound signal.
<b>request rate</b>	The rate at which requests arrive at a servicing entity.
<b>resilience</b>	A fabric's ability to adapt to or tolerate a failure of a component within the fabric.
<b>resilient core/edge topology</b>	Two or more switches acting as a core to interconnect multiple edge switches. Nodes attach to the edge switches.
<b>responder</b>	The N_Port with which an exchange originator wants to communicate.
<b>retimer</b>	A circuit that uses an independent clock to generate outbound signals.
<b>return loss</b>	The ratio (expressed in dB) of incident power to reflected power, when a component or assembly is introduced into a link or system. Return loss can also refer to optical power or to electrical power in a specified frequency range.
<b>RLS</b>	Read Link Status.



<b>route</b>	As it applies to a fabric, the communication path between two switches. Might also apply to the specific path taken by an individual frame, from source to destination. <i>See also</i> <a href="#">FSPF</a> .
<b>routing</b>	The assignment of frames to specific switch ports, according to frame destination.
<b>RR_TOV</b>	Resource recovery timeout value. The minimum time a target device in a loop waits after an LIP before logging out an SCSI initiator. <i>See also</i> <a href="#">E_D_TOV</a> , <a href="#">R_A_TOV</a> .
<b>RSCN</b>	Registered state change notification. A switch function that allows notification of fabric changes to be sent from the switch to specified nodes. The fabric controller issues RSCN requests to N_Ports and NL_Ports, but only if they have registered to be notified of state changes in other N_Ports and NL_Ports. This registration is performed through the State Change Registration (SCR) Extended Link Service. An N_Port or NL_Port can issue an RSCN to the fabric controller without having completed SCR with the fabric controller.
<b>RTWR</b>	Reliable transport with response. Might appear as a task in <a href="#">portLogDump</a> command output.
<b>running disparity</b>	A binary parameter indicating the cumulative disparity (positive or negative) of all previously issued transmission characters.
<b>RW</b>	Read/write. Refers to access rights.
<b>RX</b>	Receiving frames.
<b>RX_ID</b>	Responder exchange identifier. A 2-byte field in the frame header that can be used by the responder of the exchange to identify frames as being part of a particular exchange.
<b>S_ID</b>	Source ID. Refers to the native port address (24-bit address).
<b>SAN</b>	Storage area network. A network of systems and storage devices that communicate using Fibre Channel protocols. <i>See also</i> <a href="#">fabric</a> .
<b>SAN architecture</b>	The overall design of a storage network solution, which includes one or more related fabrics, each of which has a topology.
<b>SAN port count</b>	The number of ports available for connection by nodes in the entire SAN.
<b>scalability</b>	One of the properties of a SAN: the size to which a SAN topology can grow port and switch counts with ease.
<b>SCN</b>	State change notification. Used for internal state change notifications, not external changes. This is the switch logging that the port is online or is an Fx_Port, not what is sent from the switch to the Nx_Ports.
<b>SCR</b>	State change registration. Extended Link Service (ELS) requests the fabric controller to add the N_Port or NL_Port to the list of N_Ports and NL_Ports registered to receive the Registered State Change Notification (RSCN) Extended Link Service.
<b>SCSI</b>	Small Computer Systems Interface. A parallel bus architecture and a protocol for transmitting large data blocks to a distance of 15 to 25 meters.
<b>SCSI-2</b>	An updated version of the SCSI bus architecture.
<b>SCSI-3</b>	An SCSI standard that defines transmission of SCSI protocol data over different kinds of links.
<b>SDRAM</b>	The main memory for a switch.
<b>sectelnet</b>	A protocol similar to Telnet but with encrypted passwords for increased security.
<b>security policy</b>	Rules that determine how security is implemented in a fabric. Security policies can be customized through Secure Fabric OS or Fabric Manager.
<b>SEQ_ID</b>	Sequence identifier. A 1-byte field in the frame header change to identify the frames as being part of a particular exchange sequence between a pair of ports.
<b>sequence</b>	A group of related frames transmitted in the same direction between two N_Ports.
<b>sequence initiator</b>	The N_Port that begins a new sequence and transmits frames to another N_Port.
<b>sequence recipient</b>	Serializing/deserializing circuitry. A circuit that converts a serial bit stream into parallel characters, and vice versa.
<b>serial</b>	The transmission of data bits in sequential order over a single line.
<b>server</b>	A computer that processes end-user applications or requests.
<b>service rate</b>	The rate at which an entity can service requests. <i>See also</i> <a href="#">request rate</a> .

<b>SES</b>	SCSI Enclosure Services. A subset of the SCSI protocol used to monitor temperature, power, and fan status for enclosed devices.
<b>SFF</b>	Small-form-factor. An industry term for a smaller transceiver. <i>See also</i> <a href="#">SFP</a> .
<b>SFP</b>	Small-form-factor pluggable. A transceiver used on 2 GB/s switches that replaces the GBIC.
<b>SFP cable</b>	A cable specifically designed for use with an SFP. Not compatible with GBICs.
<b>SI</b>	Sequence initiative.
<b>Simple Name Server</b>	<i>See</i> <a href="#">SNS</a> .
<b>Single Mode</b>	The fiber-optic cabling standard for devices up to 10 km apart.
<b>S-Link Service</b>	Facilities used between an N_Port and the fabric, or between two N_Ports, for login, sequence/exchange management, and maintaining connections.
<b>SMDS</b>	Switched Multimegabit Data Service. A good protocol for interconnecting LANs; however, SMDS has less error-checking capability than Frame Relay.
<b>SMF</b>	Single-mode fiber. <i>See also</i> <a href="#">LWL</a> .
<b>SMI</b>	Structure of management information. A notation for setting or retrieving SNMP management variables.
<b>SNA/SDLC</b>	Systems Network Architecture/Synchronous Data Link Control. A structure for transferring data among a variety of computing platforms.
<b>SNMP</b>	Simple Network Management Protocol. An Internet management protocol that uses either IP for network-level functions and UDP for transport-level functions, or TCP/IP for both. Can be made available over other protocols, such as UDP/IP, because it does not rely on the underlying communication protocols. <i>See also</i> <a href="#">community (SNMP)</a> .
<b>SNS</b>	A switch service that stores names, addresses, and attributes for up to 15 minutes and provides them as required to other devices in the fabric. SNS is defined by Fibre Channel standards and exists at a well-known address. <i>Also referred to as</i> <i>directory service</i> or <i>name server</i> .
<b>SOF</b>	Start of frame. A group of ordered sets that marks the beginning of a frame and indicates the class of service the frame will use.
<b>soft zone</b>	A zone consisting of zone members that are made visible to each other through client service requests. Typically, soft zones contain zone members that are visible to devices using Name Server exposure of zone members. The fabric does not enforce a soft zone. Note that well-known addresses are implicitly included in every zone.
<b>SolP</b>	SCSI-over-IP.
<b>SONET</b>	Synchronous optical network. A standard for optical networks that provides building blocks and flexible payload mappings.
<b>special character</b>	A 10-bit character that does not have a corresponding 8-bit value but is still considered valid. The special character is used to indicate that a particular transmission word is an ordered set. This is the only type of character to have five ones or zeroes in a row.
<b>SPLD</b>	Simple PLD. Usually, either a PLA or PAL.
<b>SPOF</b>	Single point of failure. Any component in a SAN whose malfunction could bring down the entire SAN.
<b>SQ_ID</b>	Sequence ID. Used to identify and track all of the frames within a sequence between a source (S_ID) and destination (D_ID) port pair.
<b>SRM</b>	Storage resource management. The management of disk volumes and file resources.
<b>SSH</b>	Secure shell. Used to support encrypted Telnet sessions to the switch. SSH encrypts all messages, including the client sending the password at login.
<b>Standard Translative Mode</b>	Allows public devices to communicate with private devices that are directly connected to the fabric.
<b>stealth mode</b>	A method used in some switches to simulate switches using QuickLoop.
<b>store-and-forward</b>	A switching technique that requires buffering an entire frame before making a routing decision.

<b>striping</b>	A RAID technique for writing a file to multiple disks on a block-by-block basis, with or without parity.
<b>switch</b>	A fabric device providing bandwidth and high-speed routing of data through link-level addressing.
<b>switch name</b>	The arbitrary name assigned to a switch.
<b>switch port</b>	A port on a switch. Switch ports can be E_Ports, F_Ports, or FL_Ports.
<b>switch-to-switch authentication</b>	The process of authenticating both switches in a switch-to-switch connection using digital certificates. <i>See also</i> <a href="#">authentication</a> , <a href="#">digital certificate</a> .
<b>SWL</b>	Short wavelength. A type of fiber optic cabling that is based on 850-nm lasers and supports 1.0625 GB/s-link speeds. SWL can also refer to the type of GBIC or SFP. <i>See also</i> <a href="#">LWL</a> .
<b>syslog</b>	Syslog daemon. Used to forward error messages.
<b>T10</b>	A standards committee chartered with creating standards for SCSI.
<b>T11</b>	A standards committee chartered with creating standards for Fibre Channel.
<b>tachyon</b>	A chip that supports FC-0 through FC-2 on a single chip.
<b>target</b>	A storage device on a Fibre Channel network. <i>See also</i> <a href="#">initiator</a> .
<b>TC</b>	Track changes.
<b>TCP/IP</b>	Transmission Control Protocol/Internet Protocol.
<b>Telnet</b>	A virtual terminal emulation used with TCP/IP. <i>Telnet</i> is sometimes used as a synonym for the Fabric OS CLI.
<b>tenancy</b>	The time from when a port wins arbitration in a loop until the same port returns to the monitoring state. <i>Also referred to as</i> loop tenancy.
<b>throughput</b>	The rate of data flow achieved within a cable, link, or system. Usually measured in bps (bits per second). <i>See also</i> <a href="#">bandwidth</a> .
<b>tiering</b>	The process of grouping particular SAN devices by function and then attaching these devices to particular switches or groups of switches based on that function.
<b>Time Server</b>	A Fibre Channel service that allows for the management of all timers.
<b>topology</b>	As it applies to Fibre Channel technology, the configuration of the Fibre Channel network and the resulting communication paths allowed. There are three possible topologies: <ul style="list-style-type: none"> <li>• Point to point—A direct link between two communication ports.</li> <li>• Switched fabric—Multiple N_Ports linked to a switch by F_Ports.</li> <li>• Arbitrated loop—Multiple NL_Ports connected in a loop.</li> </ul>
<b>TPC</b>	Third-party copy. A protocol for performing tape backups without using server resources.
<b>track changes</b>	A Fabric OS feature that can be enabled to report specific activities (for example, logins, logouts, and configuration task changes). The output from the track-changes feature is dumped to the error log for the switch.
<b>transceiver</b>	A device that converts one form of signaling to another for transmission and reception; in fiber optics, optical to electrical.
<b>Translative Mode</b>	A mode in which private devices can communicate with public devices across the fabric.
<b>transmission character</b>	A 10-bit character encoded according to the rules of the 8b/10b algorithm.
<b>transmission word</b>	A group of four transmission characters.
<b>trap (SNMP)</b>	The message sent by an SNMP agent to inform the SNMP management station of a critical error. <i>See also</i> <a href="#">SNMP</a> .
<b>trunking</b>	In Fibre Channel technology, a feature that enables distribution of traffic over the combined bandwidth of up to four ISLs between adjacent switches, while preserving in-order delivery.
<b>trunking group</b>	A set of up to four trunked ISLs.
<b>trunking ports</b>	The ports in a set of trunked ISLs.

<b>TS</b>	Time Server.
<b>TTL</b>	Time-to-live. The number of seconds an entry exists in cache before it expires.
<b>tunneling</b>	A technique for enabling two networks to communicate when the source and destination hosts are both on the same type of network but are connected by a different type of network.
<b>TX</b>	Transmit.
<b>U_Port</b>	Universal port. A switch port that can operate as a G_Port, E_Port, F_Port, or FL_Port. A port is defined as a U_Port when it is not connected or has not yet assumed a specific function in the fabric.
<b>UDP</b>	User Datagram Protocol. A protocol that runs on top of IP and provides port multiplexing for upper-level protocols.
<b>ULP</b>	Upper-level protocol. The protocol that runs on top of Fibre Channel. Typical upper-level protocols are SCSI, IP, HIPPI, and IPI.
<b>ULP_TOV</b>	Upper-level timeout value. The minimum time that an SCSI ULP process waits for SCSI status before initiating ULP recovery.
<b>unicast</b>	The transmission of data from a single source to a single destination. <i>See also</i> <a href="#">broadcast</a> , <a href="#">multicast</a> .
<b>UTC</b>	Universal Time Conversion. <i>Also known as</i> Coordinated Universal Time, which is an international standard of time. UTC is 8 hours behind Pacific Standard Time and 5 hours behind Eastern Standard Time. <i>See also</i> <a href="#">GMT</a> .
<b>WAN</b>	Wide area network.
<b>watchdog</b>	A software daemon that monitors Fabric OS modules on the kernel.
<b>WDM</b>	Wavelength division multiplexer. Allows multiple wavelengths to be combined or filtered on a single cable.
<b>well-known address</b>	As it pertains to Fibre Channel technology, a logical address defined by Fibre Channel standards as assigned to a specific function and stored on the switch.
<b>WTV</b>	Write timeout value. Refers to an ELS field that appears in <a href="#">portLogDump</a> command output.
<b>WWN</b>	World wide name. An identifier that is unique worldwide. Each entity in a fabric has a separate WWN.
<b>X.25</b>	A protocol that uses logical channels. X.25 allows high-quality communications between computers and can accommodate <i>noisy</i> data communications through error-detection and error-correction (retransmission) algorithms.
<b>zone</b>	A set of devices and hosts attached to the same fabric and configured as being in the same zone. Devices and hosts within the same zone have access to others in the zone but are not visible to any outside the zone.
<b>zone configuration</b>	A specified set of zones. Enabling a configuration enables all zones in that configuration. <i>See also</i> <a href="#">defined zone configuration</a> , <a href="#">enabled zone configuration</a> .
<b>zoning</b>	A feature in fabric switches or hubs that allows segmentation of a node by physical port, name, or address.

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